A conceptual view on Computer Vision Syndrome through an Ayurveda Prospective

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ABSTRACT

Acharya Vagbhat quotes that loss of vision is a loss of life. Vision is our primary connection with the world. With the help of eyes, we can interact with our surroundings in more than a million ways every second. Computer, the knowledge bank of modern life, has emerged as a profession causing vision-related discomfort, ocular fatigue, and systemic effects. Computer Vision Syndrome (CVS) is the new nomenclature to the visual, ocular, and systemic symptoms arising due to the long time and improper working on the computer and is emerging as a pandemic in the 21st century. Approximately 60 million people suffer from Computer Vision Syndrome globally, which leads to a decrease in productivity at work and Quality of life. Ayurveda being an ancient system of medicine has millions of remedies in it, which is useful for all types of disease, whether it is stated directly or not. Ayurveda classics quote that if a physician is not able to get a direct description of the disease in Samhitas, he should not feel guilty about that and should treat the condition based on the involvement of Doshas in it. Hence, here an attempt has been made to provide an explanation of Dosha, Dushya & Samprapti of Computer vision syndrome according to Ayurveda.

Key words: Computer Vision Syndrome, Emerging Pandemic, Quality of Life, Dosha, Dushya, Samprapti

INTRODUCTION

Eye holds a special status among all the sense organs. Eyes are the most precious gift of God to the living beings. Today, in the 21st century, where we are living in a highly sophisticated environment, computer is one of the most developed technologies which are used regularly by the children, the young and the old. Improper use of sense organs, violating the moral code of conduct, and the effect of the time are the three basic causative factors behind all the health problems.

More and more men are sitting in front of the computer for longer hours, which is a highly vision demanding task which is leading to ocular and systemic discomfort coined as Computer Vision Syndrome (CVS). Studies indicate that eye-related symptoms occur in 50-90% of VDT workers, while a study released by NIOSH stated that 22% of computer workers have musculoskeletal problems.

Ayurveda, the first systematic health system on this planet, has kept the doors open to prospective/undescribed health problems to be incorporated in the system on the fundamental grounds.

On critical analysis of the symptoms of CVS on Tridoshika theory of Ayurveda, as per the road map given by Acharya Charaka, it seems to be a Vata-Pitta ocular cum systemic disease which needs systemic as well as topical treatment approach. This article verifies the hypothesis that CVS in Ayurvedic perspective is a Vata-Pitta disease affecting mainly eyes and body as a whole.
AIM AND OBJECTIVES

The main aim behind working in this article was to create an Ayurvedic understanding of computer vision syndrome to know about the Dosha Dushya Samurcharna & Samprapti Ghatak of computer vision syndrome. To justify the quotes of Acharya Charak which postulate that it is not mandatory to have names of all the diseases, and even it is not a matter to be ashamed. Diseases can be classified innumerably according to Dosha & Dushya, involvement, and place of origin of the disease.

MATERIALS AND METHODS

Samhitas like Charak Samhita, Susrut Samhita, Astang Hridaya, Astang Sangraha etc. & various modern books related to ophthalmology were used as main source materials while working on this article. Apart from this, various websites, articles, and various other literary works were considered and searched thoroughly for this review article.

Computer Vision Syndrome {CVS} is not directly mentioned in classical Ayurvedic text. However, Acharya Charaka describes that one should go through Nidana Panchaka, to understand the symptoms of CVS probable Nidana Panchaka are discussed as follows -

A. Nidana

Most of the symptoms of CVS are due to working on computers; moreover, Acharyas had described Hetu of all Netra Rogas in general as follows -

a) Bahya Hetus - The external factors causing Dosha Prakopa, prolonged working on computers screens or watching television for longer duration, gazing at fast-moving images and multiple colors frequently, non-uniform illumination of a workplace, an improper posture of sitting, etc. works as a Bahya Hetu or external factors for Computer Vision Syndrome.

b) Abhyantara Hetus - All internal factors leading to Prakopa of Tridosha due are known as internal factors or Abhyantara Hetus.

Acharya has compiled all the Nidanas so magnificently so the detailed description of this can be understood as follows -

- उष्णाभिःस्तस्य जलप्रवेशाद्रिश्य - Sudden deviation in the temperature can be the major reason for eye diseases, sudden drop in the body temperature leads to the vessels constrict & damage in the vasculature of eyes. This creates circulatory disturbances, which may affect the mechanism of nutrition & becomes the reason for eye diseases.

- दूरेक्षणात् - To see very distant objects constantly, result in eye strain which can later become the cause of eye disorders.

- सूक्ष्म भिरीक्षणाच्छ - Viewing the minute things causes strain to the ciliary muscles and lens results in visual problems.

- प्रसक्तसंरोदि - Continuous weeping; causes enhanced stimulation to the Lacrimal gland, by which the lacrimal gland secretes more fluid that washes away the nutrients and bacteriostatic activity of the conjunctival sac, which make it more prone to diseases.

- कोपाभिघातादभतमाए - By indulging in excessive rage, Pitta vitiates and causes Pitta Vikaras in the eyes.

- शोक - By excessive sorrow, Vata vitiates and roots Vataja Netra Vikara in the eyes.

- क्लेश - Physical & Mental tiredness causes vitiation of Sharira and Manasik Doshas & leads to various eye diseases.
1. **Asatmendriyartha Samyoga** - The incomplete correlation of sense with their objects which might happen either accidentally, inevitably, or intentionally is known as Asatmendriyartha Samyoga.

Examples for such improper contacts w.r.t. Chakshurendriya is as follows-

a. **Atiyoga** - Seeing very bright light or bright objects for a longer duration like in reference of CVS it is constantly looking at the computer screen without blinking is Atiyoga of Chaksunudiya. The glare of the screen is the main pathogenic factor of CVS.

b. **Heenayoga** - Characters displayed on VDT's are made up of numerous small dots or pixels. Pixelated characters are brightest in the center, with the brightness decreasing towards the outer edges. Seeing this is a type of character Heenayoga.

c. **Mithyayoga** - Concentrating on the small letters over the screen, viewing objects from a distance of fewer than six inches, or working on the monitor of not appropriate height, observing much brighter computer screens is considered as the Mithyayoga of Chakshurendriya in reference of Computer Vision Syndrome.

2. **Pragyaparadha** - Doing work without proper Dhi, Buddhi, Dhriti & Smriti is known as this action in future leads to Dosha Vaishmya and produces disease. In the context of CVS use of a computer for a huge amount of time despite trouble in the eye in an indiscipline manner can be termed as Pragyaparadha. Due to depressed surroundings and a lack of Sattva Guna and an increase in Raja and Tama Guna, a person spends significant time on social network sites which also working as aggravating factor for CVS nowadays.

3. **Parinama** - Parinama refers to Kala. Excess, mild, and altered appearance of their characteristics in any particular Ritu refer to Ati Yoga. Hina Yoga and Mithya Yoga. However, in the context of CVS, we did not find any relation of Parinama.
B. Poorvaroopa

Poorvaroopa are the prodromal symptoms that occur before the disease is felt by the patient. Moreover, prodromal signs are observed by the physician.

1. Avilata - Dirty eyes with discharges (Malayuktam) in reference to Computer vision syndrome the symptom can be taken as blurring of vision

2. Samrambha - Angry looks in reference to Computer vision syndrome it is the foreign body sensations or atypical discomfort in the eye.

3. Ashru - excessive watery discharge from the eyes.

4. Kandu - Itching can occur because of eye strain.

5. Upadeha - Stickiness in eyes due to continuous watery discharge of eyes.

6. Guruta - Heaviness is due to eye fatigue in CVS.

7. Usha - Burning sensation in eyes.

8. Toda - Pricking pain in eyes.

9. Raga - Redness in eyes.

10. Vartma Kosha Shoola - Pain in the fornices.

11. Vartma Kosha Shookapurnabh - Foreign body sensation in the fornices a typical symptom perceived by a CVS patient.

12. Vihanyaamana Rupa - Visual disturbances


14. Kriyaswakshi Yathapura - Reduced activities / movements, e.g., blinking

C. Roopa

Roopa are the typical signs and symptoms by which a disease is diagnosed.

In reference to CVS sign and symptoms has not been mentioned directly anywhere in Ayurvedic texts but here an effort has been made to understand symptomatology of CVS by considering the main symptoms of CVS which is found in majority of patients with the help of classical Ayurvedic references -

a) Eyestrain - According to Acharya Sushruta, the second Patala of Netra has Akunchana and Prasarana properties which resembles the work of muscle fiber, and therefore considered it as Mansa Ashrita Patala based on its functional capacity, continuous work load on this Mansa Ashrita Patala can cause Aayasa or eye strain. In a person working for prolonged hours on a computer they generally cross this limit which causes Shrama, i.e., Apakarshana, which ultimately leads to a decrease in Kapha & increase Vata and Pitta.

b) Blurred vision - Accommodative spasm of the ciliary body leads to blurred vision. Prolonged working on VDT’s leads to Vata vitiation as which gives rise to the blurring of vision like symptoms in patients.

c) Dry eye - In Ayurvedic texts, dry eye is mentioned in various ways, i.e., Visushakbhava, Visushaktav, and Sushakalpa are Vatapitta symbolizing terms; hence Vata and Pitta are responsible for dry eye symptoms. Inadequate blinking while working on a computer also decreases tear film reconstruction and results in dry eye.

d) Headache - According to Ayurveda, its pathophysiology can be described as prolonged working on computer monitor leads to eye fatigue, which leads to an aggravation of Vata and Pitta and results in Shirotapa and Shiroruja.

e) Neck / Shoulder / Back Pain - According to Ayurved Ativyayama of muscles leads to such symptoms, which vitiates Vata and Pitta, which leads to neck/shoulder/back and finger pain.
D. **Upshyaya**[^12] - *Upshyaya* is the medicines, food items, and activities that give feelings of wellbeing to the patient after consuming them. In the patient of computer vision syndrome *Upshyaya* may include sound sleep, eye rest, vitamin C & A rich food, *Tarpana Karma*, fresh air, ocular and head massage, and soothing *Netra Bindu*.

**Computer Vision Syndrome in Ayurved Prospective**

Acharya Charaka[^13] opens a broad way by stating that it is not mandatory to have names of all the diseases, and even it is not a matter to be ashamed. Diseases can be classified innumerably according to *Dosha & Dushya*, involvement, and place of origin of the disease. So, by considering *Prakariti, Adhisthana & Samuthana* of *Dosha* will understand any disease and can lay down a treatment protocol accordingly. Acharya Charaka[^14] states that *Prataksha, Anumama & Aptopodesh* are the three tools by which we can know about any disease. Among all these, *Aptopodesh* occupies the top list because of other sources like *Prataksha, Anumama, Pramanana, Aagama*, etc.

- **Acharya Charaka**[^15] has explained 13 tools to describe an ‘Anukta Vyadhi’ they are described as follows -

1. **Evam Prakopanam**

*Prakopanam* indicates to *Hetu*. In CVS, constantly staring at the computer screen with wide-open eyes causes three main changes in the eye i.e.

a) Widely open eyes will evaporate the moisture present on the anterior surface.

b) Concentrating on the screen with a decreased blinking rate decreases the tear secretions from the lacrimal gland.

c) Viewing small fonts or pixelated characters for a long time may lead to fatigue in the extraocular muscles of the eyes.

General causative factors like *Nidana & Vishesh Nidana* discussed above are also considered as causes of aggravation of *Doshas*.

2. **Evam Yonim**

Yoni symbolizes *Moolbhoota Karana* of the disease. It is a *Vatadi Dosha* dominating disease in Ayurved. It can be correlated to *Vatta Pitta Pradhana Tridoshaja* disease.

a) Red eyes[^16] - पित्त - पितोष्णं रागः:

b) Itching[^17] - कफ - कण्डूपदेहाश्रुयुतः:

c) Eyestrain[^18] - वात - शाङ्किष्ठः धूमलाटस्य तोदस्फुरणभेदनम:

d) Blurred near and distant vision[^19] - वात - धूमविलयस्य धूमदशा दृश्यं कुयुयाः स धूमर:

e) Double vision[^20] - वात - एकं मन्यते द्विधा:

f) Head, neck, shoulder, and back pain[^21] - वात - पित्त - मन्यास्तिं बायुरन्यतो वा प्रबतायेत:

3. **Evam Utthanam**

Understanding the involvement of *Doshas* in the occurrence of the disease is called *Utthana*. The causative factors mentioned above are due to the vitiation of the *Doshas*. *Sthanasamshraya* of the vitiated *Pitta* occurs by the *Khivaigunya* at the *Pitta* predominant area of the eye. *Vegodeerana* means continuously working with no relaxation of eyes, constantly staring at the VDT’s causes less blinking in the eyes pathology of CVS starts even causing accommodative insufficiency and convergence Insufficiency like symptoms. *Vata* and *Pitta Dosha Prakopa* causes *Sthanasamshraya* by *Khivaigunya* at the *Vata* dominant areas like *Krishna Mandala* etc. Hence all the processes mentioned above increasingly cause the manifestation of symptoms of “Computer Vision Syndrome.”

4. **Evam Atmanam**

*Atmana* refers to *Swarupa* or clinical manifestations of the disease.

The sign and symptoms of CVS are Red-eye, burning of eyes, Itching, Eyestrain, blurred near and distant vision, Difficulty in focusing, Double vision, Squinting,
Headache, Neck / back / shoulder pain and Fatigue.

5. Evam Adhishthana

It refers to Ashraya, Vitiated Vata and Pitta Dosha will take Sthanasamshraya at Netra Patala and further causes lead to progression of the symptoms of CVS. Among Dushya Rasa, Rakta, Mamsa & Asthi Dhatu are involved after the Prakopana of Vata and Pitta Dosha.

6. Evam Vedanam

The word “Vedanam” signifies knowledge. Here the word can be described in clinical features and various diagnostic tests done in CVS. In Computer vision syndrome, not any particular diagnostic tools are described, but by using the Schirmer test, Dominant eye test, and visual acuity, we can rule out the condition like CVS.

7. Evam Samsthanam

The clinical manifestation of the disease is known as Samsthana. The signs and symptoms of CVS have been described above.

8. Evam Upadravam

Upadrava is the disease after the occurrence of the main disease and it is dependent on the main disease. Regarding Upadravas they are Shushkakshipaka (Dry eye), Avsada (Depression), and musculoskeletal disorder.

9. Evam Vriddh, Sthana, Kshaya

The aggravating factor for the disease i.e., the Upshayas and relieving factors for the disease i.e., Anupashayas. For this particular disease following can be considered as Upshaya are, diet containing all the good nutrients, working with proper rest and proper blinking of an eye, good workplace ergonomics, uniform illumination.

Anupashaya means a combination of the above-mentioned subject which aggravates the symptoms which are dry eye condition prolong working hour, reduced blinking, disturbed sleep pattern, excessive screen glare.

10. Evam Udarkam

After a complete treatment protocol, the residual conditions of any disease which is not relieved by the specific treatment is called Udarka it leads to secondary diseases or complications with the progression of time. CVS is a lifestyle disease that causes no fatality but may reduce the quality of life. There is no evidence that it causes permanent damage to the eyes.

11. Evam Naman

According to the above discussion it has been concluded that Computer Vision Syndrome is an “Anyukta Vyadhi.” Acharya Charak in Sutrasthana has stated that a physician should always diagnosis an Anyukta Vyadhi based on the presences of Dosha & Dushya in it so here we have made a try to describe Computer Vision Syndrome and in the similar sequence we would name Computer Vision Syndrome as ‘Vata Pitta Pradhana Tridoshaja Netra Roga’

12. Evam Yogam

As it is very clear from the above discussion that Computer Vision Syndrome is the diseases which is not directly mentioned in Ayurved classics therefore any direct protocol has also not mentioned for this particular Vyadhi but Acharyas have always mentioned that success of any treatment depends upon the Yukti of Vaidhya.

E. Samprapti Ghataka

Dosha - Vata, Pitta Pradhana Tridoshaja Netra Roga
Dushya - Rasa Dhatu, Rakta Dhatu, Mamsa Dhatu, Majja Dhatu,
Agni - Jatharagni, Rasa Dhatwagni, Rakta Dhatwagni, Majja Dhatwagni, Mamsa Dhatwagni
Srotas - Roopavaha Srotas
Srotodushti Prakara - Vimargamama and Sanga
Adhishthana - Netra (lids, conjunctiva, cornea & lacrimal glands)
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