ABSTRACT
Computer vision syndrome (CVS) is a complex of eye and vision related problem that experienced during prolong computer use. The conventional and main approach in the management of CVS is lubricating eye drops, but frequently instillation of eye drop develops drug toxicity and costly regime. To overcome these lacunas, it is necessary to find out drugs or therapy which can be beneficial for management of CVS without any side effect. Therefore, in this review article an attempt is made to asses CVS and discuss about role of ‘Tarpana’ in preventing CVS.
Keywords: Computer Vision Syndrome, Tarpana.

INTRODUCTION: The use of computers and digital electronic devices has become the necessities of life. This unnecessary prolonged exposure to digital devices has been the cause of ocular disorder termed as computer vision syndrome (CVS). The symptoms associated with CVS are dry eyes, eye strain, fatigue, excessive tear secretion, red eyes, burning eyes, blurred vision, light or glare sensitivity and the musculoskeletal problem like neck pain, shoulder pain. These symptoms result from ocular surface abnormalities or accommodative spasm or extraocular etiologies. The present trend of treating CVS is ocular surface lubricant, computer glasses and counseling for judicious computer use, but these treatment modalities have very little effect.\(^i\)

According to American optometric Association, constant looking at the monitor or screen decreases the blinking rate of eyelids due to this reduces moisture in the eyes drastically and causes dryness. In 21st century, CVS is a major occupational hazard and it affects approximately 70 % of all computer users. A data from worldwide shows about 60 million people suffering from CVS and 1 million new cases recorded each year.\(^ii\)

There is no description of CVS in Ayurvedic texts, but according to Charaka, if the name of the disease is not known then consider the pathophysiology and dominance of Tridoshas for the treatment of disease.\(^iii\)

Symptoms of CVS are similar to the symptoms of Shushkaakshipak of Sarvagata Netravyadhi. Symptoms of Shushkaakshipak are Gharshan (grittiness), Toda (priking sensation), Bheda (pain), Updeha (coating), Krichomeelan (difficulty in opening and closing of eye lids), Vishushkata (dryness), Rooksh Vartma (dryness of eyelids), these symptoms can be correlated with symptoms of CVS. On the basis of Tridoshik theory of Ayurveda, as per guideline given by Acharya Charaka, CVS seems to be a Vata pittajanya Vyadhi.\(^iv\)

Many local therapeutics are described for management of Netravikara, among them Netratarpana is the highly beneficial for eye disorder. The alternative word for
Netrarpana is Netrabasti. Netrarpana means nourishment or rehydration of eyes.

**AIM AND OBJECTIVES**

- To explore textually the etiopathogenesis of CVS according to Ayurvedic concept as well as modern point of view.
- To review of the Ayurvedic approach to management of CVS.

**Disease review:**

Symptoms of CVS are classified into four group

1. Asthenopia – Asthenopia is a word that describes the strain on the eyes for any reason.
2. Extraocular symptoms – Musculoskeletal symptoms such as neck pain, shoulder pain, headache these symptoms are often due to improper placement of computer screen.
3. Ocular surface related symptoms – Dryness of the eyes, red eyes, gritty sensation and burning of eyes.
4. Visual symptoms like blurred vision, double vision, and difficulty in changing focus.

Dryness and redness of eyes are common factors found in computer users due to the absence of adequate blinking of eyelids. The normal blinking rate is about 16-20 per minute, but while working on a computer the blink rate comes down 6-8 blink per minute because of continuous staring at the computer screen. It leads to evaporation of corneal tear film and causes dryness. Uncorrected refractive error can increase the intensity of symptoms of CVS. The computer monitor is made up of small dots called pixel. It is difficult to focus on the screen of the computer. The character (pixel) on computer screen are not uniformly bright and produce a slight difference in contrast, as a result the letter appears hazy even at high resolutions. This increases strain on the eyes and it is important cause of CVS.

**Ayurvedic Review**

According to Charaka, Asatmendriyarth Sanyoga is one of the causes of disease. Asatmya sanyoga means composite of Indriyarth which are harmful to body and mind.

In CVS the Asatmendriyarth Sanyoga of chakshurendriya is as follow-

1. Heen yoga – less use of Chakshurendriya (working on computer without blinking)
2. Atiyoga – Excessive use of Chakshurendriya – spend a lot of time on the computer screen
3. Mithya yoga – Watching continuous changes in brightness of computer screen, seeing computer from very short distance, watching flickering image, small fonts. All these factors together lead to the cause of Doshprakopa. These aggravated doshas accumulated in Bahya Patalas and produced symptoms of CVS.
4. Pradnyaparadh- Mansika pradnyaparadh may observe in the patients suffering from CVS. These patients are mostly under mental stress because of the nature of their jobs specially those who are working in the software companies, call centres etc.
5. Parinama- Aggravated Vatadi dosha lead to increases dryness in the eyes due to exposure to cold in air conditioned atmosphere by CVS patients. The duration of work can also be considered under Kala i.e, the longer the period the patient is exposed to computer work he is more prone to develop CVS.
6. Purvaroopa- The features explained initially under CVS are seen to be explained under Purvaroopa of Netrarogas by Acharya Sushruta are
Avila, Samrambha, Ashru, Kandu, Upadeha, Guru, Oosha, Toda, Ragayuktam, Sashoolam Vartmakosheshu. Shukapurnabham.xi

7. Rupa- Dryness of Eye & other signs and symptoms explained in CVS are included under the heading ‘Rupa’.

Management of Computer vision syndrome
The aim of Ayurvedic management in Netrarogas is to remove the etiological factors and normalize the deranged Vata and other Doshas.xii Tarpana is the most prestigious Kriyakalpa often used in Ayurvedic practice. It is a procedure of inducing ‘Tripti’ (satisfaction) to the eye in which pouring of lukewarm oily substance through specially prepared border over eyes. The eyes are made to open and close several times.xiii

Indication of Tarpana-
By virtue of nourishment Tarpana is effective in following condition
Visual disturbance; Timira, Avil Darshana
Dry eye condition: Ruksha, Parishushkata, Ati vishushka, Daruna, Klishta Vartma
Disease of eyelids: hardness painful eye lid, damages eyelashes, Daruna Vartma. Structural deformities like squint.xiv

According to Acharya Vagbhata Tarpana is effective even in these Conditions-
Difficulty in the movement of eye ball and eye lids: Stabdhata, Krichhonmita
Diseases of Shuklamandala: Sirotpata, Siraharsha, Arjuna
Disease of Krishna mandala: Savrana Shukla, Avrana Shukla

Mode of action of Tarpana in CVS
Ghrita being Madhura and Sheeta, is the best remedy for diseases occurring due to vitiation of Vata and Pitta doshas. Netra or Chakshurendriya has dominance of Majja Dhatu. Since Ghrita provides best nourishment to the Majja Dhatu hence it acts as Balya for the eyes.xv

When combined with properly prepared decoction of medicines, the Ghrita penetrates into the micro-channels of the body. Therefore after the application of Ghrita into the eyes, the Ghrita penetrates into all the Patala’s of eye and thus it cleans and purifies every micro part of the eye.

The medicines put topically penetrate into the eyes through the cornea. The corneal epithelium acts as a barrier due to its lipophilic nature. It gets crossed by the non-polar drugs. The corneal stroma being hydrophilic in nature, it allows easy passage of drugs through the endothelium into anterior chamber.

The transportation of the drug to the target cell is accelerated by lipophilic action of Ghrita. Drug penetration into the eyeball via the corneal surface is enhanced by the lipophilic action of Ghrita this occurs because the corneal epithelium is permeable to lipid soluble substances. Tarpana with Ghrita maintain the lipid layer of tear film which minimize the evaporation of the aqueous layer of the tear film so, it helps to maintain the consistency of the tear film, thereby maintaining normal nutrition of the eyes and it minimizes the signs and symptoms of CVS.xvi

DISCUSSION:
In Ayurvedic classical texts, the CVS is not mentioned directly but the principles of Ayurveda can be applied for the better understanding of CVS. The Hetu (cause) of CVS is the inappropriate use of Chakshurendriya. This causes symptoms like eye strain, dry eyes, headache, burning...
sensation etc. There are two reasons responsible for this pathology.

1. Debridement of the tear film caused by continuous exposure of eyes to the computer screen and lack of eye blinking which maintains the tear flow.

2. Fatigue of the extraocular and intraocular muscles occurs due to continuous movements of the eyeball while working.

The Tarpana helps to maintain the normal moisture of the sclera and cornea and thus it prevents the corneal scarring. The Ghrita is Chakshushya in nature and when it is medicated with the Chakshushya Dravyas, the results get enhanced.

**CONCLUSION:** The use of digital devices for work and social purposes often for many hours each day is now common among people of all age group. The rapid increase in their use has ushered in a new era of occupation hazard which is known as CVS. A multidirectional approach is required for management of CVS. Health education, modification of ergonomics and appropriate ocular therapy are combined effective in CVS. Temporary symptomatic relief can be obtained by available modern modalities like artificial tear supplements. Ayurvedic procedures like Tarpana lubricates the eyes which maintain pre-corneal tear film. Tarpana can be beneficial for the management of CVS without any side effect. It can be used as alternative to tear supplementation.

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Corresponding Author:
Dr. Amrut Salunke, Associate Professor and HOD, Department of Shalakyatantra, R A Podar Medical (Ayu) College, Worli.
Email: snehalt003@gmail.com

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