

## Computer Vision Syndrome (CVS) - Prevention and Management

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### Abstract

As computers become part of our everyday life more and more people are experiencing a variety of ocular problems related to computer use. Today we are living in a highly sophisticated environment and computer is one of the most developed technologies which are used in present time by the children, the young and the old. More and more people are sitting in front of computer for long hours. Computer is a highly visually demanding task, but the eyes are unable to adjust themselves for long sittings in front of computer, which lead to discomfort coined as Computer Vision Syndrome- An emerging pandemic of 21<sup>st</sup> century. CVS include eyestrain, tired eyes, irritation, redness, blurred vision, and double vision, collectively referred to as computer vision syndrome. No remedial measures for the prevention and cure of this pathology prevail in the domain of modern medicine except using ocular surface lubricants, computer glasses, and counseling for judicious computer use<sup>1</sup>. This opens the door to the other systems of medicine including *Ayurveda* and *Yoga* to suggest experiments and contribute alternative modalities to alleviate or to check the sufferings of the computer users.

**Keywords** CVS, *Tarpana*, Eye Exercises, *Trataka*, *Shushkakshipaak*



**Greentree Group**

Received 20/1/15 Accepted 3/3/15 Published 10/3/15

## INTRODUCTION

Eyes are considered to be the most important and noblest sense organ of human body. In *Ayurveda* eye is one of the *Gyanedriya* (sense organ) which has dominance of *Tej Mahabhuta*. Today we are living in a highly sophisticated environment. Computer is one of the most developed technologies which are used in present time by the children, the young and the old. Working on a computer is more challenging to your eyes than reading a book or piece of paper, because a computer screen also adds the elements of screen contrast, flicker, and glare.

The human vision system is not designed for long hours of computer viewing therefore lifestyles changes lead to discomfort called Computer Vision Syndrome (CVS). CVS is a complex of eye and vision problems related to near work, which are experienced during computer use. It is a repetitive strain disorder that appears to be growing rapidly. CVS is not a single disease entity but it is a group of symptoms mainly of Eye strain, Dry eye, Blurred vision, Headache. No remedial measures for cure of this pathology prevail in the domain of modern medicine. This opens the door to the other systems of medicine including

*Ayurveda* and *Yoga* to suggest experiments and contribute alternative modalities to alleviate or to check the sufferings of the computer users.

### American Optometric Association Definition

CVS is caused by extensive use of computer which reduces the blinking rate of person and due to this water flow across the eye is reduced drastically and leads to dryness<sup>2</sup>.

**Prevalence** :According to the National Institute of Occupational Safety and Health, CVS affects about 90% of people who spend 3 hrs or more per day at a computer<sup>3</sup>. Another study conducted in Malaysia on 795 college students revealed that students experienced headache along with eyestrain, with 89.9% of the students surveyed feeling any type of symptoms of CVS<sup>4</sup>. In another study at Jamnagar 40.24% of total surveyed population have shown the prevalence of CVS<sup>5</sup>.

### Causes of CVS

- Decreased blinking rate
- Low intensity of UV rays emitted by video display terminal
- Exposure to the bright screen with small fonts

- Too bright glare from nearby light
- Improper position of computer monitor
- Inappropriate corrective lenses
- Wide angle overhead fluorescent fixture

**Symptoms of CVS:** Symptoms can be categorized as

- 1) Accommodative or asthenopic symptoms
- 2) Ocular surface related symptoms
- 3) Extra ocular symptoms

**Table No I - Symptoms and Diagnosis<sup>6</sup>**

Symptoms category	Symptoms	Diagnosis
Asthenopic	Eye strain Tired eye Sore eye Dry eye	Binocular vision Accommodation
Ocular surface related	Watery eye Irritation Contact lens problem	
Visual problem	Blurred vision Poor focusing changes Double vision Presbyopia	Refractive error Accommodation Binocular vision
Extra ocular	Neck pain, back pain, shoulder pain	

### **Prevention and Treatment<sup>7,8</sup>**

- Blink more
- Adjust seat height as computer screen 20 degrees below eye level
- Screen distance should be 16-30 inches from the eyes

- Reduce glare by directing over head lights away from the computer screen; position your monitor so that all windows are to the side rather than to the back or front, Adjust window blinds so that sunlight is always from screen and your eyes.
- Use of artificial tears or contact lens wetting solution
- Rest break to prevent eye strain.
- Lubricating eye drops.

### **Ayurveda**

In *Ayurvedic* classics, no direct reference of CVS is available but on the basis of symptoms, CVS can be correlated with *Shushkakshipaka* which is one among *Sarvagata Netra Roga*<sup>9</sup>. On having critical analysis of symptoms of CVS, it is clear that all the symptoms are mainly related to vitiation of *Vata* and *Pita doshas*. These vitiated *doshas* traverses to the eyes by *siras* and gets accumulated in eye to manifest the disease *Shuskakshi-paka*<sup>9, 10</sup>. In *Shushkakshipaka*, eyes become dry and gritty, eye lids becomes hard, rough and it becomes difficult to open up the eyes, and vision is blurred. There is pricking type of pain, foreign body sensation in eyes and constriction of eyes and liking of cold. These all features indicate the vitiation of mainly *Vata* and *Pita dosha*.

**Samprapti Ghatak:***Dosha – Vata & Pitta**Dushya - Rasa, Rakta, Mamsa, Meda,**Srotas – Rasavaha srotas**Srotodusti Prakara – Vimargagamana and Sanga**Adhithana – Netra**Sadhyasadhyata - Sadhya***Ayurvedic measures to treat CVS**

The nature of disease is *VataPittaja* and cause of disease is *atiyoga, mithyayoga* of *chakshuindriye*. In computer vision syndrome it can be concluded the syndrome can easily be cured with drugs which have *vata pittashamaka* properties.

- *सूर्योपरागानलविध्युदादिन विलोकने नोपहतेक्षणस्य। सन्तर्पणं स्निग्धहिमादि कार्यं। तथाजनें हेम घृतेन घृष्टम्॥<sup>11</sup>*

The eye (vision) that gets deranged by observing (exposure to) sun's rays, fire, lightening etc. should be given *tarpana* therapy with medicine which are unctuous, cold etc. gold rubbed in *ghrita* should be used as collyrium. Computer is also one of the light, electric and heat producing device

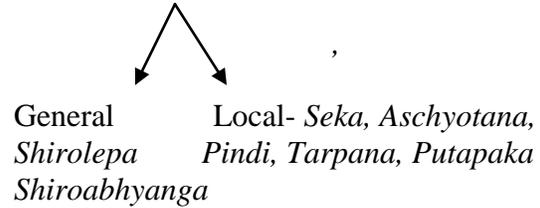
and CVS is one among such exposure ocular condition occurring due to use of computer. So treatment told by *Acharya Vagbhata* that is *sheeta, snigdha* and *santarpana chikitsa* can be applied in CVS.

- *Nidana parivarjana*
- *Shodhana*
- *Shaman*
- 1) *Abhyantara*



*Snigdha, Guru Ghrithapaana Vidalaka*

2) *Bahya*

**Shaman chikitsa** according to *Vagbhata*<sup>12</sup>

- *Snehapaan-* medicated ghee with *Jeevaniya gana dravya*
- *Tarpana* - medicated ghee with *Jeevaniya gana dravya, ,*
- *Nasya* with *Anutaila* or *Brumhana Taila*
- *Parisheka* with *Saindhava lavana* + cold milk

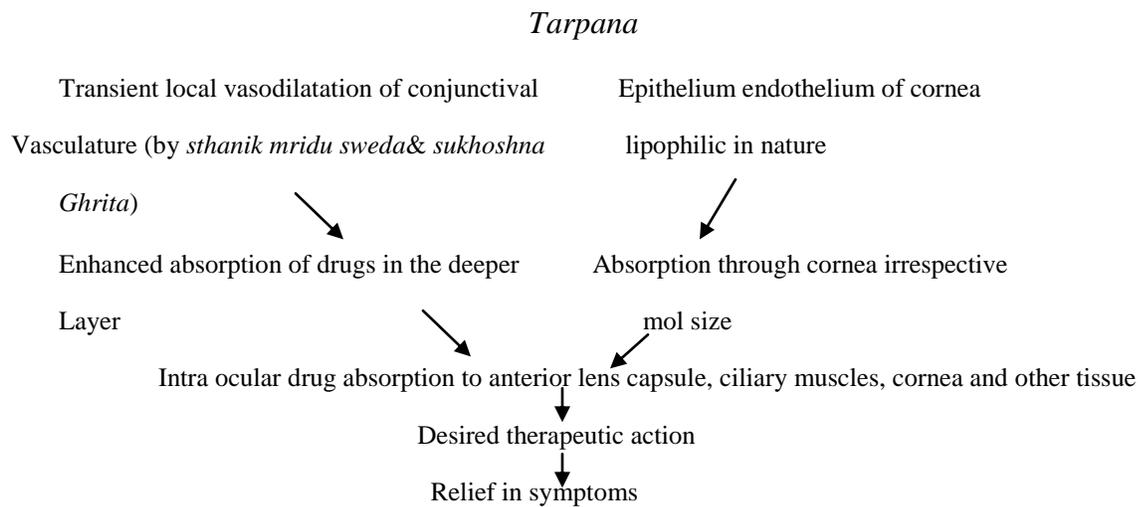
**Shaman chikitsa** according to *Sushruta*<sup>13</sup>

- *Anjana- shunti+ Stanya+ Ghrita, Vasa of Anupa and jalaja mamsa+ Shunti+ Saindhava* or *Saindhava*

- lavana+Daruharidra+Shunti+Ghrita.*
- Internal *Snehana* with *Ghrita*
  - *Tarpana* with *Jeevaniyagana siddha ghrita*

- *Nasya – Anu taila*
- *Parisheka –Shunti+Ghrita+Milk or Haridra+Devadaaru+ Saindhava lavana+cold milk*

### Mode of Action of *Tarpana* <sup>14</sup>



- Other medicine for *Tarpana Triphala Ghrita*<sup>15-17</sup>, *Yastimadgu Ghrita*, *Go-Ghrita*, *Jivantyadi Ghrita*
- *Nasya* with the *Karpasasthyadi taila*<sup>18</sup> for neck pain and shoulder pain.

Oral medicine : *Shatavaryadi choorna*,<sup>19</sup> *Triphala Ghrita*, *Saptamrita lauha*, *Patolaadi ghrita*, *Jivantyadi Ghrita*,

#### ➤ *Adravya chikitsa*

Normally the eyes are protected by a layer of tear film which covers the cornea and sclera. A normal tear film protects against eye infection and helps to supply sufficient

nutrition and oxygen to the eyes. A normal tear film remains intact for 5 to 8 seconds and with every blinking, it breaks and reforms itself. Tear break up time is used to test the time the tear film remains intact over the corneal surface. A longer tear break up time gives greater protection to the eyes. Even a slight elongation of tear break up time may bridge the gap between tear break up time and blink time, thus improving the protection of the eye surface.

The ability to see clearly in different directions, at different distances and different intensities of light is due to the coordination of eye muscles. Like other

muscles, the eye muscles react to stress by becoming chronically over-contracted, causing eyestrain, which in turn contributes to many eye problems. Therefore, relaxation is the key and the basis of yogic eye therapy. Yogic eye exercises and relaxation of eye muscles help to reduce eyestrain and also build up the stamina of eye muscles.

*Yogic* intervention takes into account all levels of being physical, mental, emotional, social and spiritual. "Problems of vision are more associated with the mind than is ordinarily supposed. The fact is that when the mind is at rest, nothing can strain the eyes, and when the mind is under a strain, nothing can rest them. Anything that rests the mind will benefit the eyes," says Dr Bates in his book 'Better Eyesight Without Glasses'. Gaining control of the mind being one of the aims of *Yoga*, it is the key to healing many diseases, including those of the eye.

In order to counteract the various effects of computer on the eye muscles, a set of eye exercises is formulated.

1. **Blinking** is an often overlooked yet simple way to keep eyes fresh & being able to focus longer. Computer users are tend to blink less,

especially when they are intently focused on something. For the next 2 min blink every 3-4 seconds. Whenever we blink our eyes are going into a brief period of darkness which help to keep your eyes fresh.

2. **Palming** is done to relieve stress around the eyes and as a way to relax our eyes while taking a computer break. Take a few deep breathes before begin. Place hands over eyes with the cup of palm covering eyes, keep fingers on forehead and heel of hand will rest on cheekbone. Make sure eyes can blink freely and not putting too much pressure on eyes.
3. **Figure of Eight** is to exercise our eye muscles and increase their flexibility. Imagine a giant figure of eight in front about 10 feet. Now turn the 8 on its side. Now trace the figure of eight with eyes, slowly. Do it one way for a few minutes and then do it the other way for a few minutes.
4. **Eye rotation** Look up, and slowly rotate your eyes in a circle in a clockwise direction. Do this for 7 cycles. Then repeat once again for the counter-clockwise direction.

5. **Eye Squeeze** Close both eyes and squeeze them shut for 5 seconds. Repeat this 5 times, and your eyes should have started to produce some more tears to moisturize your eyes.
6. **Eye Massage** the outside ridge of your eye sockets using your fingers or knuckles. You can also massage your temples. This massaging will help increase the blood flow surrounding your eyes, resulting in more oxygen being carried to your eyes, in turn giving you clearer vision.

#### ❖ **TRATAKA**<sup>20</sup>

*Tratak* is practiced in two stages. In the first stage, the practitioner fixes attention on a symbol or *Yantra*, such as the 'Om' symbol, a black dot, or the image of some deity, and stares at it, paying attention to each thought and feeling as it arises, and letting them go, so that the mind is completely absorbed with the symbol. The practice continues until the eyes begin to water, at which point they are closed, and relaxed.

The second stage is staring at a candle flame. The practice is the same up until the eyes begin to water, after which the eyes are closed, and the patient tries to concentrate on the after image, and hold it for as long as

possible. At first, it will be a real after image, but later, it will exist only in the mind's eye, and the exercise in concentration comes from trying to hold it there for a long period of time

The focusing exercises and *Trataka* improve the ability to make visual adjustments, the accommodation reflex and concentration, and help to stimulate as well as relax the eye muscles. The palming, blinking and splashing exercises relax the eye muscles.

## CONCLUSION

As no special reference regarding Computer vision syndrome is mentioned in *Ayurveda* but on the basis of clinical symptoms it can be deduced as *Vatapitaja* disease which can be closely correlated with *Shushkakshipaka*, mainly involving eyes. *Kriya kalp* is effective in management of CVS and cost effective therapy. So therapy which pacifies *Vata* and *Pitta dosha* should be advocated to provide relief in the symptoms. It would seem then that regular *Yoga* practice is a very good option as a preventative and therapeutic means to overcome CVS. It can be easily learnt, is cost effective, has no negative side effects, will be beneficial for a lifetime and will bring about positive effects

on the physical, mental, emotional and spiritual levels.

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