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## MANAGEMENT OF COMPUTER VISION SYNDROME THROUGH AYURVEDIC PRINCIPLE

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### Abstract

Today in mechanical era of 21<sup>st</sup> century. We are living in a highly sophisticated environment. Everyone is running in a heat of hope, he has no time to rest. Man is using different technologies to achieve his target 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 men are sitting in front of computer for longer and longer hours. Because computer is such a highly visually demanding task, but the eyes are still structured according to old hunting days and are unable to adjust themselves, which lead to discomfort coined as Computer Vision Syndrome Modern medicine doesn't have any definite treatment for the particular problem hence the ayurvedic scholars take it as a challenge to cure it by our various therapies like *tarpana*, *netra prakshalana*, *Anjana*, *Aashyotana*, *Nasya*, *Bidalaka* and *yoga* etc. are very helpful

**Keywords:** Computer, Computer Vision Syndrome, Tarpana, Netra prakshalana,

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## INTRODUCTION

Eyes are the gateways of external world, visual defects tantamount to the obliteration of the world. The eyes are said to be most important than all other Indriyas. They are considered as the reflectors of the mind. Eyes are the most precisely developed portions of the brain seen outside the skull. With the march of time, most of the dietary habits, social structure, life-style and environment have been changing. Computer is one of the most developed technologies which are used in present time by the children, the young and the old. The human vision system is not designed for long hours of computer viewing. So these lifestyles changes lead to discomfort called Computer Vision Syndrome (CVS) [1]. It is a complex of eye and vision problems related to near work which are experienced during or related to 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.

### Understanding CVS with Ayurvedic Siddhantas [2]

We shall understand this syndrome with the Ayurvedic perspective of Hetu, Asatmendriyartha Samyoga, Purvaroop, Roopa of Netrarogas (Doshik involvement), Samprapti to find out a suitable Chikitsa for treating CVS.

#### 1. Hetu

- a) The external factors causing Dosha Prakopa are Bahya Hetus. Working with computers and watching television, playing with video games and mobile games for longer duration, looking at fast moving images and Bhasvara Vasthu Darshana and multiple colours very frequently, improper lighting arrangement, improper seating position, etc acts as a Bahya Hetu in causing Computer Vision Syndrome [3].
- b) The internal factors causing Prakupita Tridosha due to various Nidanas are Abhyantara Hetus. Along with existing eye diseases like Presbyopia, Myopia, Asthenopia, Dry Eyes, Glaucoma which further aggravates the severity acts as Abhyantara Hetu.

**2. AsatmendriyarthaSamyoga:** The Asatmendriyartha Samyoga of Chakshurendriya is as follows:

- a) **AtiYoga - AtiDarshanam** i.e., seeing very bright light or objects for long periods of time, and doing the same action again and again.
- b) **Mithya Yoga** - Seeing for a long time those objects which are very near or very far, which are very minute, which are very bright and sparkling. In CVS we can say that; watching computer from very near Working with computer and watching. Reading

small font and watching flickering images Sitting in an improper position while working with computers are Mithya Yogas.

- c) **Prajnaparadha Manasika Prajnaparadha** can also be found in the patients of Computer Vision Syndrome as most of them are stressed from the nature of the job especially those working in software companies and call centre.
- d) **Parinama** – Due to exposure to cold in air conditioned atmosphere by a CVS patient would further aggravate Vatadi Dosha and increases the dryness in eyes as it's not a natural atmosphere. The duration of work can also be considered under Kala i.e., more the duration the patient is exposed to computer work he is more prone to develop Computer Vision Syndrome.

### 3. Purvarupa

The symptoms explained initially under CVS are seen to be explained under Purvarupa of Netrarogas by Acharya Sushruta are Avila, Samrambha, Ashru, Kandru, Upadeha, Guru, Oosha, Toda, Ragayuktam, Sashoolamvartmakosheshu, Shukapurnabham [4]. AcharyaDalhana has commented Kandupoornopadehavat (excess Itching) is present instead of Ashrupoornopadehavat (excess laceration) and SaShoolam as Ishat Shoolam i.e., mild pain are present in this stage.

### 4. Rupa - ShushkaakshiPaaka

The major symptom – Dryness of Eye & other symptoms that have been explained in CVS, it seems to be very near to the term Shushkaakshi Paaka explained under SarvagataRoga [5].

### 5. Samprapti [6]

Illustration Showing the Scheme of Samprapti of CVS [7]

- Achakshushya Nidana Sevana: (Working with computer for longer duration & following other Dosha aggravating factors)
- Dosha Vruddhi and Dosha Dushti: (NidanaSevana continued further)
- Dosha Prakopa (with predominance of Vata and PittaDosha)
- Spreading of Dosha (in the body through all Sira and Srotas Entry of Doshas into UrdhwagataSira Urdhwagati of PrakupitaDosha through the UrdhwagataSira SthanaSamshraya of PrakupitaDosha in various parts of the Netra)
- Poorvaroop Lakshana Manifestation of NetraRoga (Computer Vision Syndrome).

**Understanding CVS with Modern concepts [7]**

- 1) In Computer Vision Syndrome the sclera turns red which is called as the red eye due to excessive flow of blood to eye or inflammation or due to continuous work.
- 2) **Muscles of eyes** - Persons working with computer need to move their eyes frequently as to focus on the screen and on the nearby documents alternatively while entering various data which causes muscle strain resulting in eye strain, tiredness and pain in the eyes.
- 3) **Lacrimal apparatus** - Due to uninterrupted watching and reduced blink rate of eyes, the tear secretion by lacrimal glands decreases or tears quickly get evaporated and the eye is not properly moistened. This causes the sensation of dry eye and burning in the eyes.
- 4) Blink rate decreases to as low as 6–8 blinks/minute focusing on the computer screen. The normal blink rate is 16–20 per minute. It leads to early evaporation of tear film due to decreased blinking rate leading to dry eyes.
- 5) Function of Lipid layer is to prevent evaporation of aqueous layer & act as surfactant. Function of Aqueous layer is to supply oxygen to corneal epithelium & wash out debris & noxious irritants. Function of Mucus layer is to help in lubrication. Any type of impairment in any of these layers lead to dry eyes in further causing CVS.

**Chikitsa Siddhanta According to Ayurveda**

**Smprapti ghataka-** Dosha – Vataand Pitta,

Dushya – Rasa, Rakta, Mamsa, Medha,

Srotas – Rasavaha Srotas,

SrotodrutiPrakara – Sanga,

Rogamarga – Madhyama,

Adhistana – Shiras, Vyakta Stana – Nethra (all the Netra Mandalas).

Hence looking into the Ayurvedic treatment modalities, the drug should have Vatapitta property [8]

- 1) **Nidana Parivarjana** is the first and foremost Chikitsa in CVS.
- 2) Vaatadi Doshashama includes Sthanika and Sarvadehika treatment procedures like Shamana and Shodhana which include Rasayana, Aushadha, Kriyakalpa, though the disease Computer Vision Syndrome is not mentioned in Ayurveda Samhitas based on the principles the following Chikitsa Siddhanta can be formulated.
- 3) In an Aganthu Karana Vyadhi like Computer Vision Syndrome Netra Netra Prasadana Janana, Drushtiprasadajanana drugs should be used which cause Dosha Shamana and

SamprapthiVighatana along with Vaatabhishyanda Chikitsa with Netrya and Snigdha Vatahara drugs are beneficial.

4) **Different Kriya** - Kalpas which are helpful in treating the CVS [9]

**a. NetraPrakshalana (Eye wash)**

Washing the eyes with medicated decoctions like Lodhra or Amalaki Swarasa after getting up from bed in the morning is a very good therapy for eyes [10].

**b. ShiroAbhyanga** [11] helps the oil to reach up to the brain. The optic nerve which ends in the Drishtipatalam (retina) is the direct extension of brain stem. So daily application of oil, selected according to the Prakriti of the person helps in preventing eye diseases and also nourishes all sense organs and also helps in Drishtiprasadana Abhyanga suppress the Vatadosha confined to eye.

**Mode of action** - Local Abhyanga over the eyes gives cooling effect & also relaxes the eye from strain and also strengthens the muscles of the eyes.

**c. Anjana (collyrium)** – applying Lekhananjana because of Theekshna property, eliminate the vitiated Doshas from the Siras pertaining to Varthma and eye [12].

**d. Akshitarpana** - Akshitarpana is a unique procedure where medicated Ghrita is retained over the eyes for a specific amount of time. Tarpana- As Ayurveda texts says, Tarpana gives strength to eyes i.e. it is Dristiprasadaka so used in various diseases. Tarpana is generally done with Ghrita which is Madhura-Sheeta so; it is best for Vatapitta vitiated diseases. Also Netrendriya is Majja Dhatu predominant organ and Ghrita nourishes Majja Dhatu, so it is Balya for eye. Probable mode of action - According to modern pharmacology, various drugs used in the form of eye drops or eye ointments enters the eyeball by passing through the cornea. This penetration depends upon the permeability of various layers of cornea. The epithelium and endothelium is highly permeable for lipid content as compare to Stromal layer. Fat soluble drugs readily penetrate these layers. Tarpana with Ghrita leads to maintain the lipid layer of tear film which reduces the evaporation of aqueous Tarpana with Ghrita leads to maintain the lipid layer of tear film which reduces the evaporation of aqueous layer of tear film. So it keeps the tear film in normal state, maintaining nutrition of eyes [13].

**e. Aschyotana** - Instillation of drops of medicines to the open eye from a height of two Angulas is called as Aschyotana. Probable mode of action<sup>15</sup> - 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 transcellular pathway and correcting the abnormalities caused due to insufficient formation of tear film on pre-corneal surface.

- f. **Seka** - Pouring of thin streams of medicated solution to the eye continuously for stipulated period from a height of 4 Angulas

**Probable mode of action** [14]

As the medicine is poured slowly to eyes the tissue contact time is more than Aschyotana. The lipid soluble drugs are absorbed through corneal epithelium & endothelium; the water soluble drugs are absorbed through corneal stroma and conjunctiva both. Due to lipophilic nature of epithelium & endothelium of cornea, the lipid soluble drugs are absorbed by passive transport. The water soluble drugs are absorbed through stroma of cornea by trans-corneal pathway and helps in further reformation of the tear film on blinking.

g. **Bidalaka**- Application of drugs in the form of paste to the outer surface of the eyelids. The paste is left on site until it starts drying. Probable mode of action [15]. Medicine applied on the lid is absorbed to a greater extent reaching to conjunctiva and reduces the local temperature there by relieves inflammation, imparting soothing effect and relieving other symptoms of dry eyes.

- h. **Nasya** - is a procedure where medicines are administered through inserting into the nasal cavity through nostrils. Probable mode of action -In Ayurveda it is said that Nasa hi Shirasodwaram. i.e. nasal cavity leads to the structures of the head. So medicines administered through such route spreads to the following parts -Eyes through the nasolacrimal duct, Middle ear – through the Eustachiantube, Intra cranial spaces – through the middle ear. There is no digestion process of the medicine in this procedure so within no time delay the medicine is absorbed through the mucus lining of the structures. By cleaning all the Srotas the accumulation of vitiated Dosha in this pathway is treated. Vagbhatacharya while explaining Pratimarsha Nasya has mentioned Klamanaasha i.e. it reduces the fatigue and eye strain. It improves the vision and hence can be useful in relieving the symptoms like blurred vision, difficulty in focusing, double vision, and eye strain. It also does the Vatashamana, hence can be useful in relieving the pain in the neck and shoulder. (As. Hri. Su.20/4) Shaman Nasya helps in treating the redness of the eyes, has it reduces the linear congestion (As. S. Su.20/ 29, As. Hri. Su. 20/6) SnehaNasya acts as rejuvenating therapy where it strengthens functions of sense organs & improves the vision capacity. (As. Hri. Su. 20/23)

i. **Gritapana** - Intake of old Ghrita is very useful for the ocular tissues. After Pana, the Ghrita gets absorbed into the systemic circulation. Due to Chakshushya properties, it has an affinity towards ocular tissues and due to its lipid soluble property crosses blood ocular barriers. By active and passive transport the ingredients of the Ghrita crosses the cell membranes and reach the targeted tissues thereby correcting the abnormalities of ocular tissues, lubricating and rejuvenating it.

**2. Yoga** [16,17] Yogic practices help to reduce eyestrain and also build up the stamina of eye muscles. Mainly ShatKriyas like Trataka & NetiKriya helps in improving the vision & maintain the eye health.

**Trataka-** Trataka is practiced in two stages. In the first stage is gazing with concentration at a single object without blinking till the eye begins to water. The second stage is staring at a candle flame. 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.

### **3. Other Treatments for Computer Vision Syndrome** [18]

**Location of computer screen** - Most people find it more comfortable to view a computer when the eyes are looking downward. Optimally, the computer screen should be 15 to 20 degrees below eye level (about 4 or 5 inches) as measured from the center of the screen and 20 to 28 inches from the eyes. **Reference materials** - These materials should be located above the keyboard and below the monitor. If this is not possible, a document holder can be used beside the monitor. The goal is to position the documents so you do not need to move your head to look from the document to the screen. **Lighting** - Position the computer screen to avoid glare, particularly from overhead lighting or windows. Use blinds or drapes on windows and replace the light bulbs in desk lamps with bulbs of lower wattage. **Anti-glare screens** - If there is Anti-glare screens - If there is no way to minimize glare from light sources, consider using a screen glare filter. These filters decrease the amount of light reflected from the screen. **Seating position** - Chairs should be comfortably padded and conform to the body. Chair height should be adjusted so your feet rest flat on the floor. If your chair has arms, they should be adjusted to provide arm support while you are typing. Your wrists shouldn't rest on the keyboard when typing **Rest breaks** - To prevent eyestrain, try to rest your eyes when using the computer for long periods. Rest your eyes for 15 minutes after two hours of continuous computer use. Also, for every 20 minutes of computer viewing, 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 20ft away for 20 seconds) Blinking - To minimize your chances of developing dry eye when using a computer, make an effort to blink frequently. Blinking keeps the front surface of your eye moist. Regular eye examinations and proper viewing habits can help to prevent or reduce the development of the symptoms associated with Computer Vision Syndrome.

## CONCLUSION

Ayurveda Siddhanthas are applied by centuries by observing, understanding diseases and by well testing. By above discussion it can be concluded that Ayurveda Siddhanthas are eternal and can be applied in understanding newer diseases like Computer Vision Syndrome. Ayurveda Siddhanthas help in understanding the disease in Poorvaroopavastha itself so that it doesn't worsen the condition. Regular sittings can check further development of the disease. The Nidana mentioned under the CVS i.e. duration of Computer work is directly proportional to the severity of the symptoms in CVS. So Nidana Parivarjanameva Chikitsa can be well applied here. By above treatment modalities it can be said that CVS can be well managed with Ayurveda treatment, especially with Panchakarma.

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