



AN AYURVEDIC APPROACH TO COMPUTER VISION SYNDROME (CVS)

R.V. Ramya¹

Kawthekar Prachi²

^{1*} PG Scholar, Department of Panchakarma, SAMCH, Indore, M.P.

² Professor, Department of Panchakarma, SAMCH, Indore, M.P.

ABSTRACT :

With the advent of new technologies, occupational challenges, environment etc., has led to the manifestation of new disorders. CVS is one among such diseases affecting 90% of adults and kids due to excess use of computer, television, portable video games and mobile games. CVS is a group of symptoms like eye pain, strain, dry eyes, irritation, tiredness, blurred vision, double vision & in some cases headache, neck pain & giddiness. In modern medicine no remedial measures except using ocular surface lubricants, computer glasses, and counseling for judicious computer use. These symptoms are similar to the symptoms of *Netrarogas*. So the line of treatment is of *Netragataroga Chikitsa- Aschotana, Seka, Pindi, Bidalaka, Prakshalana* followed by *Nasya & Tarpana* with *Vatapittahara Dravyas & Shirodhara* can also be given. Yogic eye exercises relax eye muscles to reduce eyestrain and increases stamina of eye muscles. This article gives an idea about Ayurvedic & Yogic as therapeutic approach for CVS.

Keywords : Computer vision syndrome, Ayurvedic therapies, Yoga

INTRODUCTION: Computer Vision Syndrome (CVS) is occurring in 90% computer professionals characterized by complex eye and vision problems related to near work which are experienced during working with computers involving both ocular and non-ocular symptoms. It is not only affecting the computer professionals, even kids are suffering from CVS due to excess use of computer games, portable video games, mobile games and videos. Symptoms of CVS include headaches, blurred vision, neck pain, fatigue, eye strain, dry eyes, irritated eyes, double vision, vertigo/dizziness, polyopia, and difficulty refocusing the eyes. Some people also suffer from headache, neck pain & giddiness. This group of symptoms is called Asthenopia. These symptoms can be further aggravated by improper lighting conditions¹.

Mechanism of CVS is something thing like carpal tunnel syndrome which occurs by carrying out the same motion again and again. Just like other stress injuries which worsen later on, CVS also get worse the longer you continue the activity. Here the mechanism is overworking or over straining of eye muscle, which is responsible for focusing. In many cases the symptoms appear after several hours of work and not immediately².

Understanding CVS with Ayurvedic Siddhantas:³ We shall understand this syndrome with the Ayurvedic perspective of *Hetu, Asatmendriyatha 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 Syndrome⁴.

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 *Asatmendriyarthasamyoga* 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 TV in darkness or dim light or improper lighting.
- Reading small font and watching flickering images

- Sitting in an improper position while working with computers are *MithyaYogas*.

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, Sashoolamvartma-kosheshu,*

*Shukapurnabham*⁵. *Acharya Dalhana* has commented *Kandupoornopadehavat* (excess Itching) is present instead of *Ashrupoornopadehavat* (excess lacrimation) 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*⁶.

Table No. 1 CVS symptoms and their *Dosha* involvement (*ShuskaakshiPaaka*)

Symptoms	Ayurvedic terms	<i>Dosha</i> vitiation
Dry and irritated eyes	<i>Visushka Netra / Rooksha Netra</i>	<i>Vata</i>
Eye Strain	<i>Netra Klama</i>	<i>Vata</i>
Blurred vision	<i>Avila Darshanam</i>	<i>Pitta</i>
Red Eyes	<i>Netra Raaga</i>	<i>Pitta</i>
Burning Eyes	<i>Netra Daha</i>	<i>Pitta</i>
Excessive lacrimation	<i>AshruBahulata</i>	<i>Vata</i>
Double vision	<i>Dwidhapashyati (Mithyadarshana)</i>	<i>Vata</i>
Difficulty in focusing	<i>Roopadarshanaasahyata</i>	<i>Vata</i>
Change in colourperception	<i>Vikrutavarnapatavam</i>	<i>Vata / Pitta</i>
Photophobia	<i>PrakashaAsahyatva</i>	<i>Vata / Pitta</i>
Headache	<i>Sirashoola</i>	<i>Vata/Pitta</i>
Pain in shoulder, neck and back.	<i>Greeva, Bahu , Kati Shoola</i>	<i>Vata</i>
Contact lens discomfort	-----	-
Slowness in changing focus	<i>Alpakriyalaghava of netra</i>	<i>Vata</i>

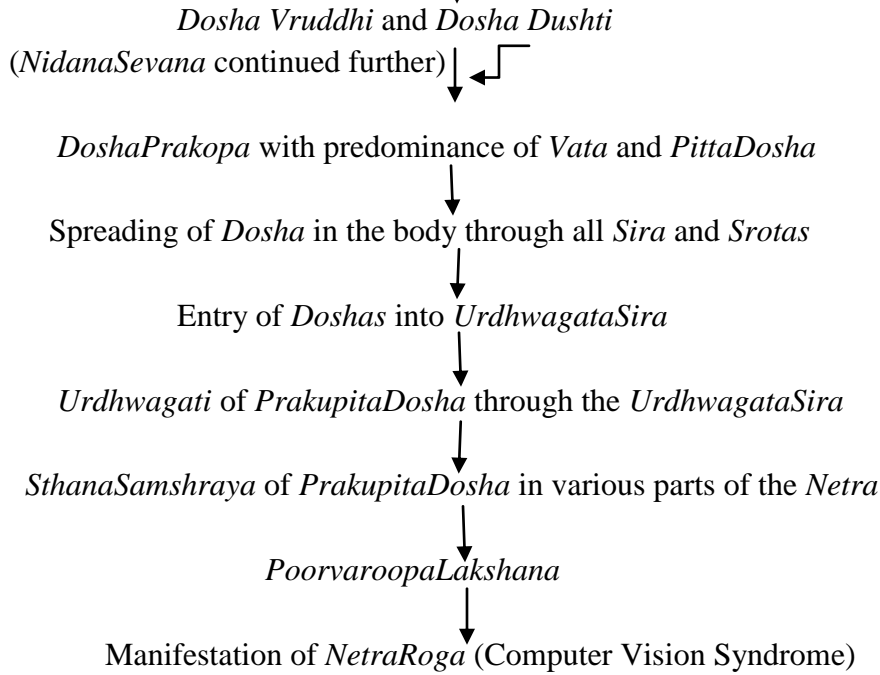
Table No.2*Netra RogaLakshana* in comparison to CVS

<i>Vata</i>	<i>Lakshana</i>	CVS
<i>Alparaga</i>	Redness	✓
<i>Upadeha</i>	Excessive secretions of eye / stickiness	✓
<i>Toda</i>	Mild pain (pricking)	✓
<i>Bheda</i>	Tearing pain	✓
<i>Pitta</i>	<i>Lakshana</i>	
<i>Daha</i>	Burning sensation	✓
<i>Atiruja</i>	Excessive pain	✓
<i>Raga</i>	Redness	✓
<i>Peetopadeha</i>	Yellow discoloration	-
<i>Kapha</i>	<i>Lakshana</i>	
<i>Shuklopadeha</i>	White discoloration	-
<i>Bahupicchilaashru</i>	Excess sticky secretions in eyes	-
<i>Guruta</i>	Heaviness	✓
<i>Kandu</i>	Itching	✓

5. Samprapti:

Illustration Showing the Scheme of Samprapti of CVS⁷

AchakshushyaNidanaSevana(Working with computer for longer duration & following other *Dosha* aggravating factors)



Understanding CVS with Modern concepts⁸:

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.

ChikitsaSiddhanta

1. Ayurveda

Dosha – Vataand Pitta, Dushya – Rasa, Rakta, Mamsa, Medha, Srotas – Rasavaha Srotas, SrotodrustiPrakara – Sanga, Rogamarga – Madhyama, Adhistana – Shiras, Vyakta Stana – Nethra (all the *Netra Mandalas*). Hence looking into the *Ayurvedic* treatment modalities, the drug should have *Vatapitta* property⁹.

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 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 CVS¹⁰:

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 eyes¹¹.

b. *Anjana* (collyrium) – applying *Lekhananjana* because of *Theekshna* property, eliminate the vitiated *Doshas* from the *Siras* pertaining to *Varthma* and eye¹².

c. *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. *ShiroAbhyanga* 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*¹³.

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 layer of tear film. So it keeps the tear film in normal state, maintaining nutrition of eyes¹⁴.

e. **Aschyotana** - Instillation of drops of medicines to the open eye from a height of two *Angulas* is called as *Aschyotana*.

Probable mode of action¹⁵ - 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 action¹⁵ - As the medicine is poured slowly to eyes the tissue con-tact 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 action¹⁵ - 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:** *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.^{16, 17}

- **Gazing Exercise** - The preparatory eye practices of sideward, diagonal, circular, upward and downwards viewing are helpful. These included left and right gazing, upwards and downwards gazing, nose tip gazing and eyebrow center gazing. Blinking frequently and intentionally during the practices provide a good tear film for healthy eyes.

- **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, 19}

- **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 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*.

REFERENCES:

1. en.wikipedia.org/wiki/Computer_vision_syndrome, date February 23 2017
2. Verma SB. Computers and vision. J Postgrad Med [serial online] 2001 [cited 2008 Sep 12]; 47:119. Available from: <http://www.jpgmonline.com/text.asp> 2001/47/2/119/214

3. ShettyRanjith Kumar, Applied aspect of ayurveda siddhanta in understanding of computer vision syndrome, cited in ijaar volume ii issue 7 may-june 2016

4. Kunte, Navare, Annonated, Paradkar Shastri H.S. Ashtanga Hrudaya of Vagbhata reprint edition 2002, Varanasi, Chaukhambha Surabharati prakashan p 157

5. Acharya JT Sushruta Samhita of Sushruta 1 with Nibandha Sangraha commentary by Dalhana, Varanasi Chaukhambha Surabharati Prakashan reprint 2003 p 630

6. "Application Of Ayurveda Siddhanta In The Management Of Computer Vision Syndrome" By Dr. K.S. Dutta Sharma, G, B.A.M.S., Dissertation Submitted To The Rajiv Gandhi University Of Health Sciences, Karnataka, Bangalore.

7. Acharya JT Sushruta Samhita of Sushruta with Nibandha Sangraha commentary by Dalhana, Varanasi Chaukhambha Surabharati Prakashan reprint 2003 p 597

8. Bhanderi DJ, Choudhary S, Doshi VG. A community-based study of asthenopia in computer operators. Indian J Ophthalmol 2008; 56:51-5

9. Sharma R K, Dash B (ed). Charaka Samhita of Agnivesa with Ayurveda Dipika of Cakrapanidatta. 2007 reprinted. Varanasi: Chaukhamba orientalia: 2007. p. 160

10. Acharya JT Sushruta Samhita of Sushruta with Nibandha Sangraha commentary by Dalhana, Varanasi Chaukhambha Surabharati Prakashan reprint 2003 p 630

11. Acharya Yadavji Trikamji, Sushruta Samhita Chikitsastana 24/15-16 Dalhana Commentary, Chaukhambha Surbharati Prakashana Edition-Reprint 1994 p 395

12. Sashtri Kasinath Charaka Samhita Vidyoti
i Hindi Commentary Sutrastana 5/15,
Chaukhambha Sanskrit Pratishtana Edition-
Reprint 2012 p 78
13. Yadavji Trikamji Acharya Sushruta Samhit
aChikitsastana 24/26 Dalhana commentary,
Chaukhambha Surbharati Prakashana
Edition-Reprint 1994 p 396
14. Sharma VN. Essentials of pharmacology
Basic principles and general concepts 3rd
edition CBS publishers and distributors New
Delhi 2007 p 673
15. Santhosh et.al., : An
Ayurvedic prophylactic and curative
approach to Ocular manifestations in
Computer Vision Syndrome AAMJ 2016;
3:669 – 672
16. Hathayoga Pradipika, Sahajanandachintam
ani – Swathmaramayogindravirachita,
Sanskrit Teeka, 2 Upadesha 30 Netikriya,
Kemaraja Shrikrishnadas Prakashana,
Bombay 2002, p 56
17. Hathayoga Pradipika, Sahajanandachintam
ani – Swathmaramayogindravirachita,
Sanskrit Teeka, 2 Upadesha 31 Trataka,
Kemaraja Shrikrishnadas Prakashana,
Bombay 2002, p 56
18. Taptagaporn S Sotoyama M Saito S
Suzuki T Saito S. Visual comfort in VDT
workstation design. J Hum Ergol (Tokyo)
1995 24:84-8
19. https://en.wikipedia.org/wiki/Computer_vision_syndrome#Prevalence, date
February 23 2017

Corresponding Author: Dr. V Ramya R.
PG Scholar, Department of Panchakarma,
SAMCH, Indore, M.P.

Email:

Source of support: Nil

Conflict of interest: None

Declared

*Cite this Article as : V. ramya r et al : An
Ayurvedic approach to computer vision syndrome
(cvs): www.ijaar.in : IJAAR VOLUME III
ISSUE 1 MAR-APR 2017 page no 78-86*