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**Dr. Manish Walia**  
PG Department of Rasa  
Shastra & Bhaishajya Kalpana  
Vigyana, M.M.M. Govt. Ayu.  
Colg. Udaipur, Rajasthan,  
India

**Avadhesh Bhatt**  
Prof., PG Department of Rasa  
Shastra & Bhaishajya Kalpana  
Vigyana, M.M.M. Govt. Ayu.  
Colg. Udaipur, Rajasthan,  
India

**Dr. Ajay Sharma**  
PG Department of Rasa  
Shastra & Bhaishajya Kalpana  
Vigyana, M.M.M. Govt. Ayu.  
Colg. Udaipur, Rajasthan,  
India

**Correspondence**  
**Dr. Manish Walia**  
PG Department of Rasa  
Shastra & Bhaishajya Kalpana  
Vigyana, M.M.M. Govt. Ayu.  
Colg. Udaipur, Rajasthan,  
India

## An Ayurvedic management of computer vision syndrome

**Dr. Manish Walia, Avadhesh Bhatt and Dr. Ajay Sharma**

### Abstract

**Background:** Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a computer or other display device for protracted, uninterrupted periods of time. It isn't one specific problem. Instead, it includes a whole range of eye strain and pain & other symptoms are headaches, blurred vision, neck pain, fatigue, dry eyes, irritated eyes, double vision, vertigo/dizziness, polyopia and difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions or air moving past the eyes. Research shows that between 50% and 90% of people who work at a computer screen have at least some symptoms. Dry eye is a major symptom that is targeted in the therapy of CVS. It is not a very dangerous issue but can cause serious problems if not get the attention at the time. The goals of *Ayurveda* treatment for CVS include correcting the vitiation of *Vata dosha* in body and in the eyes also, relieving the symptoms of dry eyes and correcting the digestive fire and encourage lubrication in the body.

**Aim:** To explore the role of *panchkarma* in computer vision syndrome. *Panchakarma* provide an effective solution for CVS. There are various relaxing methods that help in restoring the moisture in your eyes and calm your mind and body and give you serene feelings. These methods can be very effective and have variety depend on your requirements as *Nasya*, *Shirodhara*, *Netradhara*, *Tarpana*, *Snehapan* & *Virechana* also.

**Material & method:** In the present study, we collected and compiled references regarding classical *Ayurvedic* texts, research papers in peer reviewed journals & related data of different websites have critically reviewed.

**Discussion & conclusion:** We often choose allopathic solutions for most of our problems, but in *Ayurveda*, *Panchakarma* can be the better and effective solution as it ends the problem with the help of natural products and has no side effect. *Ayurveda* is one of the effective medical systems which are beneficial to keep your eyes healthy.

**Keywords:** Computer vision syndrome (CVS), Mode of action of *Panchkarma* therapy

### Introduction

In 21<sup>st</sup> century with the changing life style, Computer vision syndrome is considered as one of the commonest diseases. Working adults aren't the only ones affected. Kids who stare at tablets or use computers during the day at school can have issues, too especially if the lighting and their posture are less than ideal. Research shows that between 50% and 90% of people who work at a computer screen have at least some symptoms. It isn't one specific problem. Instead, it includes a whole range of eye strain and pain. Dry eye is a major symptom that is targeted in the therapy of CVS. Dry eyes is not a very dangerous issue but can cause serious problems if not get the attention at the time. CVS also get worse the longer you continue the activity. In many cases the symptoms appear after several hours of work and not immediately <sup>[1]</sup>. These symptoms are similar to the symptoms of *Netrarogas*. So the line of treatment is of *Netragataroga Chikitsa - Aschotana, Seka, Sneha parishek, Prakshalana* and *Shirovasti* followed by *Nasya, Tarpana & Putpaka* with *Vatapittahara Dravyas & Shirodhara* can also be given <sup>[2]</sup>. *Yogic* eye exercises relax eye muscles to reduce eyestrain and increases stamina of eye muscles. *Ayurvedic* treatment for dry eyes can cure this syndrome completely and there are many case studies available to witness this age old holistic science. In modern medicine no remedial measures except using ocular surface lubricants, computer glasses and counseling for judicious computer use. *Nasya* is one of the *panchkarma* procedure for *urdhwajatrugata roga* (Supra-clavicle region). It acts by cleaning all the *Srotas* the accumulation of vitiated *Dosha* in this pathway is treated. This article gives an idea about *Ayurveda* and *Panchkarma* specially *Nasya* as therapeutic approach for CVS patients.

## Material & method

In the present study, we collected and compiled references regarding classical *Ayurvedic* texts, research papers [3] in peer reviewed journals & related data of different websites have critically reviewed.

## CVS in modern concepts [4]

Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a computer or other display device for protracted, uninterrupted periods of time. 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. 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. 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. 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. 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. Some people tilt their heads at odd angles because their glasses aren't designed for looking at a computer. Or they bend toward the screen in order to see it clearly. Their postures can result in muscle spasms or pain in the neck, shoulder or back. Many of the time some health problems may make the situation bad. So systemic treatment of other associated factor also very important. Associated health problems are: acidity, indigestion, gases, piles, fistula, fissure, constipation and stress etc.

Though clear cut mention of the Computer vision syndrome is not found in *Ayurvedic* text. We can correlate with *Netra roga* in *Ayurveda*. We shall understand this syndrome with the *Ayurvedic* perspective of *Hetu*, *Samprapti*, *Purvaroopo*, *Roopa* of *Netrarogas* (*Doshik* involvement), to find out a suitable *Chikitsa* for treating CVS [5].

**Hetu:** 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 [6]. 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*.

**Samprapti:** *Nidana Sevana* (Working with computer for longer duration & following other *Dosha* aggravating factors). *Dosha Vriddhi* and *Dosha Dushti* (*Nidana Sevana* continued further) *Dosha-Prakopa* with predominance of

*Vata* and *Pitta Dosha*. Spreading of *Dosha* in the body through all *Sira* and *Srotas* than Entry of *Doshas* into *UrdhwagataSira*. *Urdhwagati* of *Prakupita Dosha* through the *Urdhwagata Sira Sthana Samshraya* of *Prakupita Dosha* in various parts of the *Netra Poorvaroopo Lakshana* than Manifestation of *Netra Roga* (Computer Vision Syndrome) [7].

The *Asatmendriyartho Samyoga* of *Chakshurendriya* is as follows. *Ati-Darshanam* i.e., seeing very bright light or objects for long periods of time. 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; Sitting in an improper position while working with computers are *Mithya Yoga* and doing the same action again and again. *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. 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.

## Management of computer vision syndrome

The goals of *Ayurveda* treatment for Dry Eyes include correcting the vitiation of *Vata dosha* in body and in the eyes also relieving the symptoms of CVS and correcting the digestive fire and encourage lubrication in the body. The main concept of treatment of *Netra roga* is *Nidana parivarjan* and *Vatadi doshanashak*. *Nidana Parivarjana* is the first and foremost *Chikitsa* in CVS. *Vatadi Doshashama* includes *Sthanika* and *Sarvadehika* treatment procedures like *Shamana* and *Shodhana* which include *Rasayana*, *Aushadha*, *Kriyakalpa* and *Panchkarma*. *Tarpan*, *Seka*, *Netradhara*, *Netra-prakshalan* etc. used as *Sthanika* (local) treatment while *Nasya* used as *Shodhana* treatment for *Sarvadehika* purpose [8].

## NASYA KARMA

*Nasya* is one of the 5 *panchkarma* (*Ayurvedic* detoxification therapies) techniques. It is a procedure where medicines are administered through inserting into the nasal cavity through nostrils. This treatment eliminates the dryness that occurs at the root of many respiratory and allergic conditions. It helps in providing all the nourishment and lubrication to eyes. According to *Doshaj symptom Vagbhatta acharya* while explaining type of *Nasya* as-

- *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 also. [9].
- *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) [10].
- *Sneha Nasya* acts as rejuvenating therapy where it strengthens functions of sense organs & improves the vision capacity. (As. Hri. Su. 20/23) [11].

**Probable mode of action:** In *Ayurveda* it is said that *Nasa hi Shirasodwaram*. i.e. nasal cavity leads to the structures of the head [12]. So medicines administered through such route spreads to the following parts - Eyes through the nasolacrimal duct, Middle ear - through the Eustachian tube, Intra cranial spaces - through the middle ear.

The *Nasya dravya* acts by reaching '*Sringataka marma*'. *Sringataka* is a main vital point situated on the surface of the brain corresponding to the nerve centres. It is a composite structure consisting of four *Shiras* (arteries) in connection with four sense organs-viz, nose, eye, ear and tongue. It is an experimentally proved that wherever any type of irritation takes place in any part of the body, the local blood circulation is always increased. The same things happen when provocation of *Doshas* take place in *Shira* due to irritating effects of administered drug resulting in increase of the blood flow circulation of brain. So extra accumulated morbid *Doshas* are to be expelled out from small blood vessels and ultimately these morbid *Doshas* are thrown away in the Nasal discharge, tears and by salivation.

The nasal mucosa which comes into direct contact with the drugs applied directly included in *Nasya* therapy is supplied by many nerve ending, specially Trigeminal nerve. Direct counter irritation or stimulation of those nerve terminals could cause distal changes in the Trigeminal ganglion itself and impulses are transmitted to the central nervous system. This results in better circulation and nourishment of the organs and the disease will subside. Probably the *Nasya karma* stimulates the Trigeminal neurons which in turn may lead to alleviation of headache and other symptoms. [13].

**Properties of *Nasya dravya*:** Most of the drugs described for *Nasya* therapy have got *Katu* (Bitter), *Ushna* (Hot) and *Teekshna* (Sharpness) properties. These drugs produce *dravekaranam* (liquification) and *chedanam* (expulsion) of vitiated *doshas*. The *Kashaya rasa* (Astringent) drugs produce astringent effect while *Madhura rasa* (Sweet) drugs produce cooling and nourishing effect.

#### Other procedure

Many of the time some health problems may make the situation bad. Sometime systemic treatment also beneficial for other associated factor. *Netra rogas* caused by specially *Vata-pitta dosha* dominant so some procedure are also useful for management of CVS. Some of these are –

**Eye wash (*Prakshalan*):** Eyewashes are very good for eye irritation and burning eyes. Just fill your mouth with cool water (without swallowing it) and splash cool water over your open eyes. This is a very effective method and it has a double cooling effect, both from outside and from the oral cavity, that will make your eyes feel fresh, happy and cheerful. If in one glass water add one tsp of triphala powder and keep it overnight. Next day strain the water and wash your eyes with this *Triphala* water atleast 2-3 times in a day. *Triphala* is very good herb for eyes and this method can give very good results. [14]

***Netra Tarpana*:** It is a specialized *Ayurvedic* treatment for eyes, that helps relieve tiredness and improves eyesight. *Netra Tarpana* acts as both preventive & curative therapy for maintaining normal healthy condition of eyes. *Netra Tarpana* is a procedure where the lukewarm medicated oil or ghee is made to stay stagnant in the eyes

for a speculated time in a specific formed frame. *Ghritha* which is *Madhura-Sheeta* so; it is best for *Vatapitta* vitiated diseases. Also *Netrendriya* is *Majja Dhatu* predominant organ and *Ghritha* nourishes *Majja Dhatu*, so it is *Balya* for eye. According to modern pharmacology, various drugs used in the form of eye drops or ointments enters the eyeball by passing through the cornea. This penetration depends upon the permeability of various layers of cornea. Fat soluble drugs readily penetrate these layers. *Tarpana* with *Ghritha* 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 [15]

***Shirodhara*:** This therapy includes dropping of continuous stream of oil, milk or medicated buttermilk on the Third Eye for complete relaxation. *Shirodhara* is effective in treating dry eyes. *Netradhara* is also beneficial in treating computer vision syndrome and dry eyes. It is effective in reducing the irritation caused to eyes.

***Snehapana (Gritapana)*:** This therapy involves consumption of heavy dose of medicated *Ghritha*. *Snehapana* is given to the patient on the basis digestive fire. Intake of old *Ghritha* is very useful for the ocular tissues. After *Pana*, the *Ghritha* 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 *Ghritha* crosses the cell membranes and reach the targeted tissues thereby correcting the abnormalities of ocular tissues, lubricating and rejuvenating it.

***Virechana*:** After good lubrication of body with *Ghritha*, *Sneha Virechana* is given to patient to eliminate the toxins of body. In this condition, patient gets loose motion for a day and thus, the desired detoxification of whole body is attained.

#### Life style modifications

This is the last step of *Ayurveda* and *Panchkarma* treatment for the dry eyes, which make some needed changes in lifestyle which start from the "early to bed, early to rise" phenomenon. Food habits, living style, and addictions are the few things that change after the treatment like healthy food and drinks and habits in, while bad addictions, junk food, reckless lifestyle out. Dry eyes can be caused due to too much salt in the diet or lack of vitamins. You can reduce the salt in your diet and drink approx 12 ounces of water stay hydrated. You can add omega-3s fatty acids (enhance your tear production) and Vit. A to your diet which can be acquired by eating plant foods i.e. vegetables and fruits. You should do regular yoga, pranayama and avoid using room heaters and air conditioners. Say good-bye to smoking and alcohol to reduce the symptoms of dry eyes.

#### Discussion

*Computer vision syndrome* name is not described in *Ayurveda* lexicons but *Ayurveda Siddhantas* are applied by centuries by observing, understanding diseases and by well testing. By above discussion it can be concluded that *Ayurveda Siddhantas* are eternal and can be applied in understanding newer diseases like Computer Vision

Syndrome. *Ayurveda Siddhantas* help in understanding the disease in *Poorvaroopavastha* itself so that it doesn't worsen the condition. Dry eyes occur due to decreased production of fluids from tear glands, which prevent tears from performing their practical functions and affect vision. When eyes become dry, they may lead to irritation. 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*.

	CVS In Modern	CVS In Ayurveda
Nidana (Causes)	Continue watching screen	<i>Atidarsanam</i>
	Watching very near & very far	<i>Durekshnata &amp; Sukshma nirekshnata</i>
	Posture not suitable	<i>Swapnaviprariyata</i>
	Light is not proper	<i>Adharniya vega dharana</i>
	Decrease blink rate or tear function	<i>Mansik dukha</i>
Lakshana (Symptoms)	Glare and reflections from the monitor	
	Dry and irritated eyes	<i>Visushka Netra/Rooksha Netra</i>
	Eye Strain	<i>Netra Klama</i>
	Burning Eyes	<i>Netra Daha</i>
	Blurred vision	<i>Avila Darshanam</i>
	Excessive lacrimation	<i>AshruBahulata</i>
	Difficulty in focusing / Blurred vision	<i>Roopadarshanaasahyata</i>
	Headache	<i>Sirashoola</i>
	Double vision	<i>Dwidhapashyati (Mithyadarshana)</i>
	Change in colour perception	<i>Vikrutavarnapatavam</i>
	Photophobia	<i>PrakashaAsahyatva</i>
Chikitsa (Treatment)	Red Eyes	<i>Netra Raaga</i>
	Slowness in changing focus	<i>Alpakriyalaghava of netra</i>
	Change the habit & avoid use of social media apparatus	<i>Nidana-parivarjan</i>
	Medicine according to symptoms	<i>Vatadi-dosha pratighata</i>

## Conclusion

With the advancement of new technologies, occupational challenges, environment etc. has led to the manifestation of new disorders as Computer vision syndrome. *Ayurveda* is an effective solution to treat several eye problems, including cataract, glaucoma, free of moisture eye syndrome and macular deterioration. Regular eye examinations and proper viewing habits can help to prevent or reduce the development of the symptoms associated with CVS. *Nasya* is highly effective in curing a number of disease pertaining to head (*Urdhawanga*), if it is performed systematically. 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. The therapy cleanses and opens the channels of the head, thereby improving the process of oxygenation (*Prana*), which has a direct influence on the functioning of brain. The therapy is beneficial if done on a regular basis, because it purify sensory function of the eyes, nose and also turns become powerful. So, *Ayurveda* is one of the effective medical systems which are beneficial to keep your eyes healthy.

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