



COMPUTER VISION SYNDROME & IT'S MANAGEMENT THROUGH SWASTHAVRITTA AND YOGA

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ABSTRACT:

In the today's modern era, Human life style has been completely changed and it is full of competition and advance technologies. Nowadays use of computer, Internet surfing is common and many computer users have Computer vision Syndrome (CVS); its temporary condition resulting from focusing the eyes on a computer display to protected, uninterrupted period of time. According to the National Institute of Occupational Safety and Health, CVS affects about 90% of people who spend 3 hours or more per day at a computer. Ayurveda refers treatments for CVS is Netra Tarpana, Netra Dhara, Nasya, Shirodhara, Shiro Abhyangam, Shiro pichu, Pada Abhyanga. Asanas, Pranayama and all the yogic practices had a definite purpose. 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.

Vision is our primary connection with this world. With the help of eyes, we can interact with our surroundings in more than a million ways every second. Computer, the knowledge bank of modern life, has emerged as a profession causing vision related discomfort, ocular fatigue, and systemic effects. Computer Vision Syndrome (CVS) is the new nomenclature to the visual, ocular and systemic symptoms arising due to the long time and improper working on the computer and is emerging as a pandemic in the 21st century. Approximately 60 million people suffer from Computer Vision Syndrome globally, which leads to a decrease in productivity at work and Quality of life.

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. 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.

The Acharyas have armed us with proper knowledge of Ayurveda to prevent & treat lifestyle disorders related to eye diseases; through explanation of Swasthavritta rules (specially mentioned as Dinacharya) & Yogic practices.

Keywords: Computer Vision Syndrome (CVS), Quality of Life, Vata dosha, Dry eyes, Ayurveda, Swasthavritta, Dinacharya, Yogic practices.

INTRODUCTION:

In the today's modern era, Human life style has been completely changed and it is full of competition and advance technologies. Nowadays use of computer, Internet surfing is common and many computer users have Computer vision Syndrome. Computer vision syndrome is considered as one of the commonest diseases. Working adults aren't the only ones affected. Kids who stare at phone 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. Symptoms of computer vision Syndrome are Headache, tired and catchy eyes, Dryness of eyes, blurred or double vision, difficulty in focusing after working long duration on computer. 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. According to a study 50-60% of computer user experiences the symptoms of Computer Vision Syndrome, its cause preventive steps¹.

Most of us are exposed to the computers and work on it throughout the day. Some of us does it overnight also. Most of our day to day work depends on the use of computers. But at the end of the day our eyes get tired and sick. They don't recover even after adequate rest since we cannot avoid the cause i.e. the computers. This problem has become very common today. This condition is called CVS or Computer Vision Syndrome. People who spend more than two hours on a computer each day will experience symptoms of CVS or Computer Vision Syndrome. 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 computer².

- The American Optometric Association defines CVS as that “complex of eye vision problems related to near work which are experienced during or related to computer use.”³
- 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 dryness⁴.
- Working at the computer all day is a physically demanding job. When working at the computer all day long the eyes receive the worst punishment. When working on the computer one full day, your eyes perform a near-task an amazing 25,000 times that match's one heartbeat⁵.
- When using the computer your blink rate decreases by a drastic 70 percent. Generally speaking means that instead of blinking an average of 14 times per minute, you are now blinking 7 times per minute.
- There are more than 10 Million visits to eye doctors every year for CVS related problems.

Causes of Computer Vision Syndrome ⁶:

A person's vision is not suited for staring at a computer screen for many hours. Computer screens are made up of pixels or tiny dots, on which the eye is unable to lock its focus. The computer user must therefore focus and refocus to keep the images sharp. This results in receptive stresses of the eye muscles. After prolonged computer use, the frequency of blinking is decreased, which causes the eyes to dry and become sore. As a result, the ability to focus diminishes and vision may blur, which causes headaches and neck pain. Any person who spends approximately two hours a day working on a computer is at risk for developing Computer Vision Syndrome.

Symptoms of Computer vision Syndrome⁷ -

- Eyestrain
- Headaches
- Blurred vision
- Dry and irritated eyes
- Sensitivity to light

CVS in Modern concepts⁸ -

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 CVS; 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.

CVS in Ayurveda concepts -

Though mention of the Computer vision syndrome is not found in Ayurvedic text; but we can correlate with Netra roga in Ayurveda. We shall understand this syndrome with the Ayurvedic perspective of Hetu, Samprapti, Roopa of Netra rogas (Doshik involvement), to find out a suitable Chikitsa for treating CVS.

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 multiple colours very frequently, improper lighting arrangement, improper seating position, etc acts as a Bahya Hetu in causing Computer Vision Syndrome⁹. The internal factors causing Prakupita Tridosha due to various Nidanans 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 Vruddhi 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 Urdhwagata Sira. Urdhwa gati 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)¹⁰. 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 CVS:

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 Nidan parivarjan and Vatadi dosha-nashak. Nidana Parivarjana is the first and foremost Chikitsa in CVS. Vatadi Dosha shaman 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 Sthanaika (local) treatment while Nasya used as Shodhana treatment for Sarvadehika purpose¹¹.

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 Klama naasha 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 Vata shamana, hence can be useful in relieving the pain in the neck and shoulder also¹².

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)¹³.

Sneha Nasya acts as rejuvenating therapy where it strengthens functions of sense organs & improves the vision capacity. (As. Hri./Su. 20/23)¹⁴

Probable Mode Of Action:

In Ayurveda it is said that “*Nasa hi Shiraso-dwaram*”. i.e. nasal cavity leads to the structures of the head¹⁵. 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 symptoms¹⁶.

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 –

1. 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.¹⁷

2. 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. Ghrita which is Madhura-Sheeta so; it is best for Vata-pitta vitiated diseases. Also Netrendriya is Majja Dhatu predominant organ and Ghrita 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 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.¹⁸

3. 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.

4. Snehapana (Gritapana): This therapy involves consumption of heavy dose of medicated Ghrita. Snehapana is given to the patient on the basis digestive fire. 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.

Ayurveda & CVS:

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.¹⁹

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 CVS²⁰.

On having critical analysis of symptoms of CVS, it is clear that all the symptoms are mainly related to vitiation of Vata and Pitta doshas. These vitiated doshas traverses to the eyes by siras and gets accumulated in eye to manifest the disease Shushkakshipaka²¹. In Shushkakshipaka, eyes become dry and gritty, eye lids becomes hard, rough & 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 eye and liking of cold. These all features indicate the vitiation of mainly Vata and Pitta dosha. Ayurveda helps rejuvenate your eyes and also make them capable of bearing the day to day stress.

"Sarvendriyanam Nayanam Pradhanam" (Sushruta samhita) Eyes are god's greatest gift and are said to be the best among all sense organs as per Ayurveda. All our life activities are possible only when our vision is proper.

Triphala eye drops relieve the eye strain and strengthen the visual function. The fruit triad of Haritaki, Vibhitaki, Aamalaki holds excellent in Ayurvedic ocular therapies, as it is prescribed for the treatment of many ocular diseases in the different forms. Triphala has Tridoshaghna property; so, it also helps in reversing the disease by reversing the vitiated Vata-Pitta Doshas by its Gunas like Ruksha, Laghu; Sheeta, Guru, and with Panch Rasatmaka Lavana Varjita Kashaya Rasa. Also, Triphala in the eye drops form helps to reduce the local symptoms as well as it strengthens the eye. Application of Triphala in the form of eye drops makes the drug available for immediate action.

Thus, these drugs help to increase the ocular strength, which in turn increases the organ's capacity to overcome its pathological condition²².

As per the reference of Ashtanga Hridaya; Jeevaniya Ghrita is considered very effective in the management of dry eye orally as well as locally (Tarpana)²³. Attributes of Ghee i.e. unctuousness and coldness are antagonistic to those of Vata and Pitta like dryness, lusterless, roughness and heat respectively. Moreover Vitamin A and E present in Ghee are Antioxidants and Vitamin A keep epithelial tissue of Body intact and keep the outer lining of eyeball moist. Lipophilic action of Ghee facilitates transportation of drugs to the target organ (Eye) since corneal epithelium is also permeable to lipid soluble substances. Also the drugs processed with Ghee remains with the contact of eye surface for longer time thereby providing maximum effect.

Drishti Prasadaka Yoga is having drugs like Triphala, Patola, Guduchi, Yasthimadhu, Shatavari all of which are having Tridoshahar mainly Pittashamaka, chakshushya and Rasayana properties and Dashmool having Tridosha shamaka mainly Vata shamaka properties thereby subsiding symptoms of excessive fatigue and inflammatory conditions of body and eye.

Yogic practices:

Yogic eye exercises and relaxation of eye muscles help to reduce eyestrain and also build up the stamina of eye muscles. The preparatory eye practices of sideward, diagonal, circular, upward and downwards viewing have perform and palming have done after each practice. Types of palming included simple palming, palming with pressure, palming with the breath and palming with Bhramari pranayama.

After the preparatory eye practices, focusing exercises have to perform. These included left and right gazing, upwards and downwards gazing, nose tip gazing and eyebrow centre gazing. Participants have asked to blink frequently and intentionally during the practices to provide a good tear film for healthy eyes. Gazing at distant objects has to practice intermittently during the practices to provide relief to eyeball muscles. Splashing the eyes with water was taught and the participants were advised to carry out the practices at their place of work.

The Asanas included vajrasana, shashankasana, ushtrasana, pawanmuktasana I and II, marjariasana, utthitadwipadasana, utthan vakrasana, bhujangasana, hastapadasana, and baddhahastasana. The pranayamas that practice included bhramari, sheetali and sheetkari. Palming of the forehead has practice to provide relief to forehead muscles. The participants also took part in singing devotional songs and meditation sessions.

TRATAKA - Trataka 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 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.

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.

Prevention of Computer Vision Syndrome:

Lifestyle 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 3-4 litres 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. Avoid smoking and alcohol to reduce the symptoms of dry eyes.

When working at a computer, there are certain preventive measures that can reduce eyestrain. Good tips to keep in mind are: position the monitor 20 to 26 inches away from the eyes, arrange light sources in a position that will minimize glare and reflections on the screen blink frequently to moisture the eyes and take vision breaks from your computer.

- Make sure your computer screen is 20 to 24 inches from your eyes at about 20° below eye level.
- If you use a document holder, keep it close to the screen.
- Dim overhead lights and keep desk lamps low and properly adjusted, so that the light doesn't enter your eyes or fall on screen.
- Every 15 minutes, focus on distant objects to relax your muscles.
- If needed, use an anti-reflective filter on the screen.
- Make effort to blink more frequently.
- Install a glare guard, an optically coated glass anti-glare filter. The high resolution, high contrast filter increases view ability.
- Use a non-reflective paint or coverings on the walls facing the computer.
- Use equipment with brightness controls or add such controls to your screen
- Make sure there is sufficient light to read hard copy without straining.
- Adjust the height of your desk or chair so the middle of the computer screen is about 20 degrees below eye level. The screen itself should be 16- 30 inches from your eyes.
- Use a stand for hard copy so that source documents and the computer screen are at roughly equal distance from the eyes.
- Be sure to blink frequently and take visual breaks. A good rule of thumb is 20/20, 20 minutes, look 20 feet away for 20 seconds.
- If your eyes are dry or irritated, use Ayurvedic herbal eye drops to moisturize and lubricate.
- If any symptoms are worse of you sight is deteriorating, make an appointment to see your eye care professional.

DISCUSSION:

Computer vision syndrome (CVS) name is not described in Ayurveda texts; but Ayurveda Siddhantas are applied by centuries by observing, understanding diseases and by well testing. 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.

CONCLUSION:

With the advancement of new technologies, occupational challenges, environment etc. has led to the manifestation of new disorders as Computer vision syndrome (CVS). Computer is one of the light, electric and heat producing device and CVS is one among such exposure ocular condition occurring due to use of computer. Treatment told by Acharya Vagbhata that is sheeta, snigdha and santarpana chikitsa can be applied in CVS. 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). There is no digestion process of the medicine in Akshi tarpan procedure; so within no time delay the medicine is absorbed through the mucus lining of the structures. The Akshi tarpan 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. 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 also relax the eye muscles.

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