INTERNATIONAL JOURNAL OF UNANI AND INTEGRATIVE MEDICINE

E-ISSN: 2616-4558
P-ISSN: 2616-454X
IJUIM 2021; 5(2): 98-100
Impact Factor (RJIF): 6.3
Peer Reviewed Journal
Received: 16-03-2021
Accepted: 18-04-2021

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Role of Nasya and Tarpan in Shushkakshipaka W.S.R. computer vision syndrome

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Abstract
There are five sense organs i.e. eye, ear, nose, tongue and skin. Among these sense organs, Ayurveda gives prime importance to the eye. It says "*Sarvendriyaanam Nayanam Pradhanam*. Eyes allows to understand and navigate the world around us. Today's world is all about technology. Life without technology would have been so difficult and unmanageable. It has touched every aspect of the lives of people. With its good effects it has some disadvantages also, inappropriate use of technology may also lead to various health concerns. Extensive viewing of the gadgets like computer screen, smart phones, television etc. can leads to symptoms like eye discomfort, fatigue, blurred vision, headache and dry eyes and other symptoms of eyes strain. These symptoms come under the spectrum of disorder called computer vision syndrome. In *Ayurveda* we tried to relate these symptoms with the symptoms of disease known as *shushkakshipaka*. In this study we tried to explain the symptoms, pathophysiology of computer vision syndrome as of *Shushkakshipka*. *Ayurvedic* management like *Tarpan*, *Anjana*, *Seka*, *Aschyotana* and *Nasya* has been explained with their mode of action. Our aim of study is to manage these diseases with *Ayurveda* which not only helps in curing the disease but also maintaining the health and functions of eyes without side effects.
Prevalence of CVS ranges from 64% to 90% among computer users. Nearly 60% million people suffer from CVS globally and millions new cases of CVS occurs each year.

Keywords: computer vision syndrome, *shushkakshipaka*, *Tarpan*, *Nasya*

Introduction
Today, in the 21st century, where we are living in a highly sophisticated environment where computer is one of the most developed technologies which are used presently by the children, the young and the old. But the eyes are still structured according to the old hunting days and are unable to cope up with the excess demand of computer work, leading to ocular and systemic discomfort coined as Computer Vision Syndrome (CVS).

American Optometric Association (AOA) defines computer vision syndrome (CVS) as "Complex of eye and vision problems related to near work, which are experienced during or related to computer use [1]. Symptoms of computer vision syndrome dry eye, eye strain, and blurred vision, red eye, burning sensation, double vision and headache. Neck pain, presbyopia.

Prevelance
CVS is becoming a major public health issue. Prevalence of CVS ranges from 64% to 90% among computer users[2].Nearly 60% million people suffer from CVS globally, and millions new cases of CVS occurs each year. A pilot survey conducted in the metropolitan cities of India revealed the incidence of CVS in as much as 70% of computer user.
IN *Ayurvedic literature*, Computer Vision Syndrome has no direct reference in Ayurvedic classics; but it may be correlate with *Shushkakshipaka*.
The *Shushkakshipaka* mentioned in *Sushruta Samhita* is seem to be its early stage but description of *Acharya Vagbhata* is the of well- stablished advanced disease state with preponderance of *Paka* – inflammation and its mainly due to vitiated *Vata and Pitta doshas*. *Nidana* and *Samprapti* can be understood by *trividhahetu's* [3] (*astamyaindriyarthasamyoga*, *prajnapradha*, *parinama*) related to *chakshurendriya* (eye).

Pathophysiology of Vision Syndrome
The focusing mechanism of human eye are not similar for printed text and for visual display units. Reading materials on printed text and computers has much difference in terms of

viewing distance, gaze angle, blinking rate, the appearance of text and demand of accommodation as well as in widening of a palpebral fissure during reading. Each printed letters are made up of a well – defined character throughout its surface, whereas VDT letters are made up of pixels. Each pixel is bright at its center and with decreasing brightness towards the periphery. So that the human eye cannot sustain focus on the pixel charecters [4]. Eyes are constantly relaxing to resting point of accommodation and struggling to gain focus on the pixel's character frequently. This frequent focusing and refocusing of the eye by the ciliary body creates fatigue to the eye and cause accommodative symptoms related to CVS [5]. Visual work in computer is demanding and includes frequent eye movement (ocular motility), accommodation (continuous focusing) and vergence (alignment demands), all of which involve continuous relaxation and contraction of the eye muscle [6].

Symptoms of CVS

Eyestrain, Tired eyes, Dry eyes, watery eyes, Irritated eyes, contact lens problem, Blurred vision, the slowness of focus change, double vision, presbyopia, Neck pain, back pain, shoulder pain. These symptoms can be correlate with *Vata-Pitta Pradhan vyadhi* of *Shushkakshipaka. Shushkakshipaka* is a type of *Sarvagata Netra Roga* [7]. *Sarvagata* means it can affect all part of the eye if not managed properly. *Acharya Shushruta* has described this disease under *Vata* predominating manifestations [8], *Acharya Vagbhata* has described it to be *Vata-Pittaja* [9] disease. The disease is characterized by features such as *kunita vartma* [10] (Excessive Blinking), *Daruna Rooksha Vartma* (Hardness and Roughness of the Eye Lid), *Avila Darshana* (Patient cannot see the Objects Clearly), *Sudarunam Yat Pratibhodanam* (Difficulty in Opening the Eye). According to *Vagbhata* [11] it is characterized by *Gharshna* (Foreign Body Sensation), *Toda* (Pricking Pain), *Upadeha* (stickness of lids), *Rooksha Daruna Vartma* (Hardness and Roughness of the Eye Lids), *Krichra Unmeela Nimeela* (Difficulty in Closing and Opening). The signs and symptoms of *Shushkakshipaka* can be a frame of picture of COMPUTER VISION SYNDROME in modern science.

Management

In ayurvedic literature various treatment modalities are applicable in treating *shushkakshipaka* including *snehpan*, *tarpan*, *putpaka*, *nasyaanjana* etc.

Mode Of Action of Tarpan:

According to *Bhavaprakasha*, *Ghrita* is *rasayana*, good for eys, stimulating for digestion, supports glow and beauty, enhances memory and stamina, promotes longevity and protects body from various disease. Go *ghrita* is called as *Uttamam*. Which means best in all *ghritas*. Most *Ayurvedic* formulations are made with *ghrita*. *Ghrita* contains vitamin A, D, E & K. It also contains carotene in it. Vitamin A &E are anti-oxidant and vitamin A keeps epithelial tissue of the body intact and keeps the ocular surface moist. In modern sciences the ocular therapeutics includes the medicines in the form of drops, ointments, gels. These are the modes of topical installations of medicines in the eye. Eye drops are the easiest and most convenient method of topical application. Aqueous solutions and aqueous suspensions are the two forms of drug instillation in eye. In aqueous solution form the drug is totally dissolved, so the drug is completely available for immediate action. But it gets quickly diluted by tears and drains through Naso-lacrimal duct. Hence, it causes low tissue contact time. Whereas in suspension forms the drug is present as small particles suspended in aqueous medium and these do not leave the eye as early as solution. Hence it increases the tissue contact time. Ointments and gels have more bioavailability of drug which increases tissue contact time and prevents dilution and early absorption. Digestion, absorption and delivery to a target organ system are crucial in obtaining the maximum benefit from any formulation. Since active ingredients of drug are mixed with Ghee, they are easily absorbed. because corneal epithelium and endothelium is lipid permiable i.e. lipophilic whereas stromal layer is hydrophilic. Hence the lipophilic and hydrophilic drugs are effectively delivered to cornea, whereas the drug permeability across the sclera depends upon the molecular size and weight of the drug. The drugs used in *Tarpan* procedure is the combination of *Ghrita* and decoction of medicines, hence the drug can easily cross the corneal epithelium also due to more contact time the active component of drug used in *Tarpan* will be absorbed more to cure the diseases. The *Ghrita* with decoction of medicines has the quality of trespassing into minute channels of the body, hence when applied in the eyes; it enters deeper layers of *Dathus* and cleans every minute part. Lipophilic and hydrophilic action of ghee facilitates transportation to a target organ and final delivery inside the cell because the cell membrane also contains lipids. This phospolipid nature of medicine facilitates the entry of the drug into the eye ball through the corneal surface. Since the corneal epithelium is permeable to lipid soluble substances and lipid soluble substances crosses the corneal epithelium irrespective of the molecular size. Moreover, the medicine preparations used in *Netra Tarpan* is in the form of suspension containing different particles of the drug and the particles do not leave the eye as quick as a solution. Tissue contact time and bioavailability is more and hence therapeutic concentration is achieved by *Netra Tarpan*. This facilitates the action of drug by two ways, first by allowing more absorption of the drug, by the corneal surface, and secondly by exerting direct pressure up on the cornea.

Mode of Action of *Nasya*

In Astanga Samgraha, it is explained that Nasa being the doorway to Shirah (head),

"*Nasa heesirshodwaram"*. the medicine taken through nostril reaches *Shringatak*, a *siramarma* through *nasashrota* and enters the *murdha* (Brain), through *netra* (eyes), *shrotra* (Ears), *Kantha* (Throat) and puts out the morbid *Doshas* from *Urdhwajatru* and throw them out from *Uttamanga. Shushruta* has clarified *Shringataka Marma* as a *Shira Marma* formed by the union of *Shiras* (blood vessels) supplying to nose, ear, eye and tongue. Commentator *Indu* of *Ashtanga Samgraha* opined *Shringataka* as the inner side of middle part of the head i.e. *Shiraso Antarmadhyam* .under the complications of *Nasya* karma. *Shushruta* noted that the excessive eliminative errhine might cause *Mastulunga* (cerebro spinal fluid) to flow out to the nose. *Shringataka Shringataka Marma* invariably corresponds to anterior fossa at base of skul i.e. cavernous sinus where venous drainage from eyes, nose, ears and tongue are reaches.

According to all *Acharya Nasa* is said to be the gateway of *Shira*. It does not mean that any channel connects directly to

the brain but they might be connected through blood vessels or through nervous system (olfactory nerve, etc). It is experimentally proved fact that wherever any type of irritation takes place in any part of body, the local blood circulation is always increased. This is the result of natural protective function of the body. When provocation of *Doshas* takes place in *Shira* due to irritating effect of administered drug resulting increase of the blood circulation of brain. So, extra accumulated morbid *Doshas* are expelled out from small blood vessels. Ultimately these morbid *Doshas* are thrown out as nasal discharge, tear and salivation.

Drugs, in the form of *Nasya* has probable mode of entry in circulation, hence it can play a vital role in the improvement of eye health. Of course, the position of the head during *Nasyakarma* also helps the medicine to enter to the circulation might be as follows.

- By general blood circulation, after it is absorbed through mucou membrane.
- Direct pooling into venous sinuses of brain via, inferior ophthalmic veins.
- Absorption directly into the cerebrospinal fluid. As this medicine is absorbed in ophthalmic vessels it has its nourishing role in extra ocular muscles and eye proper. Along with this antioxidant property have role in maintain tissue built [12]

Due to the modern life style, disease of eyes is so common. So, implementing *Nasya Karma* along with *kriyakalpas* can give promising results for *Netra Rogas*.

Yoga

Some yogic practices help to reduce eyestrain and increase the stamina of eye muscle. Eye Muscles are fatigue due to constant staring at computer screen. *Shatkarma* like *tratakanetikriya* help in maintain the eye health [13].

Blinking

Because of the attention drawn to the screen, we forget to blink. Blinking is an automatic reflex and beyond our conscious effort. To minimize the chances of developing dry eye when using a computer, try to blink frequently. Blinking keeps the eye moist.

Rest Breaks

If the eye muscles are stuck in the same position for an extended period of time, they will adversely affect vision. Taking visual breaks is an easy thing to do because they do not involve leaving the desk and do not have to be long in duration. To prevent eyestrain, try to rest eyes when using the computer for long periods. Resting the eyes for 15 min. after two hours of continuous computer uses and also perform the simple eye exercise. And for every 20 minutes of computer viewing, look into the distance for 20 sec. to allow the eyes a chance to refocus.

Conclusion

In this fresh generation, the use of computers became an fundamental, we are spending more and more time looking at any digital devices. Because of excess use of computer there is increase in visual problems, leading to the risk of developing CVS. So we need to protect our ocular health, thus Ayurveda can be helpful in managing the disease and also maintain the eyes proper function.

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