

AYURVEDIC CONCEPT OF COMPUTER VISION SYNDROME

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ABSTRACT

As paperless work is increasing day by day and use of computers is also increasing. Resulting in group of various symptoms is called as “Computer Vision Syndrome” which includes dry eyes, tired or sore eyes, eye strain, redness, itching of eye/eyes, burning sensation in eyes, headache, blurred vision, neck and/or back pain as well as shoulder pain In modern science, only ocular surface lubricant, use of computer glasses & counseling for judicious computer use is advised. These Symptoms are similar to “Samaynya Netraroga Lakshana”. This article gives an idea about dosh dushya formation of samprapti in CVS.

KEYWORDS: Nidana & Samprapti , Heenayoga , Atiyoga

INTRODUCTION

Computer Vision Syndrome (CVS) is occurring in 90% 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 dry eyes, tired or sore eyes, eye strain, redness, itching of eye/eyes, burning of eyes, headache, blurred vision, neck and/or back pain with associated shoulder pain¹ symptoms . It is not only affecting the computer professionals but even kids are suffering from CVS due to excess use of computer games, portable video games, mobile games and videos.

The CVS is called Asthenopia. These symptoms can be further aggravated by improper lighting conditions¹& other ergonomic problems. With progressive uses of computer the term RSI (Repeated

Stress Injury) is frequently found in literature. Though new diseases are introducing in human life Ayurveda still remain unchanged. The good Vaidya not nominate the disease sometimes but due to this he should not get discouraged, because all the diseases may not have name. Vaidya should treat the disease properly and not to nominate it.^{2,3}

CVS consists of eyestrain which is rarely a tired muscle, headaches of tension type, dry eyes which is due to decrease in blinking rate, blurred vision due to inaccurate focusing of image on the retina, burning eyes as a result of dryness, watering which is reflex lacrimation due to irritation in eye, redness as a sign of inflammatory reaction in eye, and glare caused by disparities in brightness in the field of view.⁴

CVS is caused by our eyes and brain reacting differently to characters on the screen than they do to printed characters. Characters on a computer screen, however, don't have this contrast, or well-defined edges. These characters are brightest at their centers and diminish in intensity toward their edges. Our eyes constantly move to the resting point of accommodation (RPA), and then strain to regain focus on the screen. This continuous flexing of the eyes focusing muscles creates fatigue and the burning tired eyes feeling.

Observations

Ayurvedic review of Computer Vision Syndrome:

The diseases which existed during the period when Samhita's were written got in them. But, they had such an intellect that they left a room for incorporating the newer upcoming diseases with time by quoting that According Charka³ Sutra All the diseases cannot be named but they can be studied and treated according to the signs, symptoms and dosha pradurbhaava.

Also Charaka acharya in Sutrasthana has said that depending on the Vedana- nidana-varna-sthana-lakshana there can be innumerable diseases. These diseases further can be described as per there involving causative factors and manifestations.³

According Charka Sutra It means that a physician should try first to understand the nature of the disease, the aggravating dosha's, the site of its affection, its etiology and then decide the line of treatment. One dosha when aggravated can cause manifold ailments so they should be studied carefully. When the physician initiates treatment after

obtaining the complete knowledge of that condition, therapeutic properties and follows the instructions given in the scripts, he will never fail to cure that disease.

That is why Ayurveda science has depicted the i.e. the "cause and effect" theory. Without any cause (Karana), effect (Karya) is not supposed to occur. The effect is always in accordance to the cause and are always interrelated. In computer Vision Syndrome the Karana is the overexposure to Visual Display Terminals and the Karya is its resultant symptoms. Before moving towards the symptomatology of the Computer Vision Syndrome, we shall first see for its

Nidana & Samprapti:-According to the Acharyas the diseases are caused due to three etiologies:-

Heenayoga: decreased or reduced blinking rate of eye is an additional factor for dryness along with exposure to atmosphere due to staring for long. This also causes irritation, burning, watering and redness in the eye.

Atiyoga: In CVS, it is atiyoga of netra where the person is exposed to monitors thereby to electromagnetic radiations for long duration excessive exposure along with excessive strain to ocular muscles participating in focusing, accommodation and convergence lead to eyestrain, headache, glare and blurry vision

Mithyayoga: improper perception is due to improper focusing and accommodation as a result of stress on ocular muscles⁵ Disobedience of ideal code of conduct. as a result of age/time/season/natural factors etc.

The studies until now are concentrated only on computer vision syndrome. Invention of computer is recent invention i.e. before three

decades, so in Ayurveda here is no information about computer and ayurveda had not mentioned its adverse effects on eye. But while describing etiology of eye diseases (netrarogas). Acharya Sushrut mentioned following points that can causes eye disease⁶:- According to Sushrut Ushnabithapthasyajalapraveshad – which can be understood as immediate exposure to two opposite factors of temperature like heat and cold. Under this study, persons working with computer get exposed to UV-radiations emitted by the monitors continuously and simultaneously due to the air conditioners used in the chambers to cool the monitors and maintain room temperature. This acts as nidhana for vitiation of pitta due to heat and vata due to cold.

1. Swapnaviparyaya – Irregular sleeping habits which is against the normal pattern of sleep. Day sleep which aggravates kapha and night arousal aggravating vata are said to be causes for many diseases. In this study most of the patients were encountered with these type of sleeping patterns as they work till late nights with system and sleep during morning hours.

2. Prasakthasamrodhanath: Watering of eye which is reflex lacrimation due to irritation caused as a result of irradiation and continuous staring at the monitors for longer duration. Here the convergence of eyeball which is one among the accomodatory changes is not absent, as monitors are placed in front and in line with eye. Hence the gaze is upward and straight which is against the rule of accommodation for near vision.

3. Sukshmanireekshanath: Observing minute objects for longer duration on computer monitors. Our eyes are well adopted for

reading printed letters with well-defined edges on contrast background. But on the contrary, the letters on monitor are devoid of well-defined edges and are on brightly illuminated background which is flickering. This causes excessive strain to the eyes.

4. Astapasevana: Computers though are not exactly objects comparable to sun but are surely the one which emit UV- radiation like sun. In this manner the catastrophe caused due to prolonged exposure might be similar in nature.

5. Abhigata: Changes that occur in our eyes due to electromagnetic radiations and other factors vitiating the basic elements of our body are studied under this.

6. Baswaravasthunireekshana: Observing brighter objects continuously like staring at monitors for longer duration as it aggravates pitta and as our eyes are predominant of Agni mahabutha, food and activities which aggravate pitta which is similar to agni in its quality which is always injurious to it. Not only this, for perception of vision, alochaka pitta is the main factor and any cause leading to vitiation of pitta deteriorates the function of this and thereby is hazardous to eye.

7. Other than these, many factors like Baswaravasthunireekshan hich includes anashan, adyashana, virudhahara, lack of exercise to eyes, improper usage of eyes, excessive stress and strain to eyes and its extra ocular muscles contribute equally leading to this syndrome.^{4,5}

Sukshmanirikshna is the cause a CVS.

The significance of knowing these helps in deriving a potent line of treatment which aims in vigatana of this samprapthi which is otherwise called chikithsa. Due to above

etiological factors the vitiated doshas traveling in the jathrudwabhaga gets accumulated in the sites where kha-vaigunya already persists due to strain and irradiation. After sanchaya and prakopa where they exhibit local signs and symptoms prasara of doshas takes place leading to pathological changes in those sites occupied by these

doshas leading to manifestation of other features comprising totally the syndrome of vision due to exposure to computer termed as computer vision syndrome

Treatment for vatadi tridoshadusti:

For the sake of treatment, symptoms of CVS according to modern science are correlated with vata pitta pradhana tridoshja dushti.

Table 1 CVS symptoms and their *Dosha* involvement (*Shuskaakshi Paaka*)

Symptoms of CVS	Ayurvedic terms	Dosha vitiation
Dry and irritated eyes	Visushka Netra / Rooksha Netra	Vata
Eye Strain	Netra Klama	Vata
Blurred vision	Avila Darshanam	Pitta
Red Eyes	Netra Raaga	Pitta
Burning Eyes	Netra Daha	Pitta
Headache	Sirashoola	Vata/Pitta
Pain in shoulder, neck and back.	Greeva, Bahu , Kati Shoola	Vata
Itching Of Eye	Kandu	Kapha

In this way symptoms of CVS can be included in Vat – Pitta Pradhan tridoshdusti so tridoshghna.

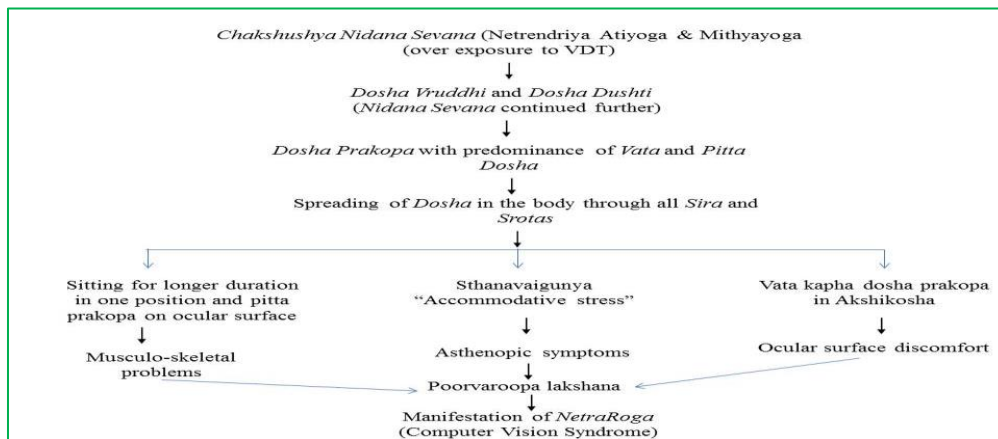
The following netragatavikruti are seen in the avarodha (suppression) of given vega (natural urges)

This is understood called Samprapthigataka of CVS.

Dosha:-Vata pitta pradhan Tridoshaj Vyadhi

Dushya:-Rasa, Raktha, Mamsa, Majja

Illustration Samprapti of CVS⁷



Agni:-Jataragni Rasa Dhatwagni, Raktha Dhatwagni Mamsa Dhatwagni Majja Dhatwagni

Ama:-Jataragni and Dhatwagnimandya Janya

Sortas:-Bahya Srotas –Netra

Srtodushti Prakara: Atipravritti and vimagragamana

Vyakthasthana :-Netra

Vyadhi Prakara:-Sadhya

Here an attempt is made to interpret the CVS under the concept of Anukthavyadhi. Acharya charaka has mentioned total 13 tools to describe a new disease which are explained in detail by correlating each factor. In charaka samhitha sutrasthana, specifically explained that it is difficult to label every disease condition, depending upon the vedana, varna, Nidanasthana and lakshana, there are innumerable diseases.^{3,8}

1. Prakopana: Constantly working with computer, staring at the monitor without blinking and without shifting the gaze makes eye wide open will lead to evaporation of the moisture which is formed by the tear film on the anterior surface of cornea and conjunctiva. As a result of reduced blinking, there will be reduced stimulation of all the secretory glands due to which uniform spreading of the tear will not occur and this causes vitiation of vata and pitta.

2. Yoni - karya yoni: Prakupitadoshas takes sthanasamshraya at different parts of eyelike prathamapatala, shweta mandala and Krishna mandala etc.

3. Uttana: The above described causative factors leads to vitiation of doshas. Continuously working with no relaxation of eyes, staring continuously at the screen causes less movement of the eyes and can be causative factor for the vitiation of the vatadosha which causes sthanasamshraya at the khavaigunya of the eye i.e., vata predominant areas like Krishna mandala etc. because of vegadharana, vitiation of jataragni will occur. Exposure to sunlight, seeing very bright light (flickering screen light) or objects for long period of time such as sun, watching welding process, TV and constantly looking at the monitor without

blinking will cause the vitiation of pitta specially alochaka pitta. The vitiated pitta takes sthanasamshraya at the kha-vaigunya of the eye i.e., pitta predominant areas of the eye like vascular parts etc. Thus all the above mentioned process gradually causes the manifestation of CVS.

4. Atmana: Long working hours with the monitor lead to eye strain which is the cardinal symptom of this disease. This eye strain will present from the initial stage of the disease till the complete remission. There are two types of diseases depending upon the swabhava i.e., mrudu (sukhasadhya) are those diseases which are completely curable and dharuna (kastasadhya and asadhya) which can't be cured completely. Here in case of CVS disease can be cured completely with the help of work station arrangement and medicine, it could be considered under mruduswabhavaja disease.

5. Adishtana - the vitiated vata and pitta doshas will take sthanasamshraya at the patala (prathama and dwithiya) shwetha and Krishna mandala and thus leads to further progression of the symptoms of CVS. From its symptoms we can consider that extra ocular and ciliary muscle tiredness due to vatadushti causes eye strain or fatigue. Accommodation insufficiency and convergence insufficiency indicates the involvement of cornea, iris, pupil, ciliary muscles, lens as well as retina. Due to kandu (itching) vitiation of kapha dosha occurs.

^{6&7} Vedana and samsthana: The symptoms of CVS which are understood by listening the patients complaints. So all symptoms being subjective the role of vedana seems to be very important.

6. Upadrava: No acute complications have been reported in patients of CVS but continuous exposure to such type of harmful radiations may cause some of the early degenerative change in the ocular components. Early degenerative changes like arcus senilis, dry eye syndrome, cataract, ARMD can be seen because of exposure to the electromagnetic radiations which are emitted into the surrounding vicinity by different parts of the VDTs.

7. Vridhistanakshaya: Here in case of CVS continuous work with the computer increases the symptoms and after taking rest decrease in the symptom is observed. Also when we consider the doshas involved, the vata-pitta doshas are in vriddhiavastha, some of the pitta gunas are in kshayaavastha, irritation and dryness can be caused due to increased ruksha, chala and laghuguna of vata and it can be due to decrease in the drava, sara and snehaguna of pitta dosha and increase in teekshna and ushnagunas of pitta. Here it is more suitable to consider the involvement of vata and pitta pradhana tridhoshaja.

8. Udarka: after complete treatment, the remaining condition of the disease which is not relieved by the specific treatment is considered as udarka either it leads to secondary diseases or complications. Till date except in few references as mentioned earlier because of long standing exposure to the UV – radiations and electromagnetic field while working with the computer it will cause damage to the brain tissue, sensitivity towards dust, hormonal imbalance etc are all can be considered as the secondary disease to CVS.

9. Nama: as we know that if we are not able to label any disease but by considering its lakshana, dosha involvement as it is mentioned in the previous pages CVS can be considered as AnukthaVyadhi. With this reference we can consider that with the change of era computers came into human life which is a new karana, its improper use leads to a new disease condition few name can be described or “Nayanbhigatajaroga”. Any of the following names can be described to the new ailment i.e., Computer atiprayogaja netraroga or sanganakati prayojanita netraroga.

10. Yoga: by considering all the factors planning the treatment strategy. Here vata-pitta pradhana tridhosha is vitiated by using vata-pitta pradhana tridhoshaja shamana line of treatment is planned.

11. Pratikaraartha pravritti & Pratikaraartha nivritti: Pratikaraartha pravritti is identifying the stage of the disease when treatment is to be initiated.

Symptoms of Computer Vision Syndrome & Their Dosha Sambandha

1. Dryness (Rukshatha of netra) and irritation (shukapurnabhameva vedana): Continuous staring at monitors and reduced blinking of eyes aggravates both vata and pitta which by their ruksha and ushnaguna dries the tears and renders the eye surface dry and irritating.

Eye strain/fatigue

It is because of a) indriya daurbalya which is due to pittaprakopa b) shrama-klama which is due to vataprakopa.

Burning sensation and redness of eyes

Sthanik pitta prakopa because of its tikshna & ushnaguna of pitta dosha.

Itching:

It is due to Kaphaprakop

Headache

Sarvadaihika & sthanika pitta dushti causes headache. As well as shrama & klama caused by aggravation of vata also leads to headache.

Blurring of vision

Alochaka pitta is responsible for proper functioning of vision and praana vayu for all the activities of indriyas. Thus, vata & pitta dushti leads to drushtidosha.

Neck, Shoulder, Back Pain

It is due to constant sitting, responsible dhatu Vataprakopa

Thus we can conclude that this anukta vyadhi is having predominance of vata & pittapradhana tridoshaja vyadhi and by applying the fundamentals of Ayurveda it should be treated accordingly.

DISCUSSION

This is derangement in functional aspect of eye called "Vision," presenting various discomforts grouped into a "Syndrome," due to exposure to the radiations from "Computer." It can manifest many Symptom like Dryness occur in Eye, Eye Strain ,burning of Eye ,blurring of Image ,Surely computer vision Syndrome is not dreadful health condition But it will decrease the efficiency of individual.

Along with visual impairments, it also leads to various systemic discomforts like backache, neck pain and carpal tunnel syndrome depending on the type of work it demands. But these are more due to the acquired posture rather than exposure to monitors. Hence, this clinical study was conducted to study the CVS clinically, emphasizing on all aspects right from the onset to the relief from symptoms

The incidence of CVS is slowly increasing from 50 – 95%.The age of onset being very young as it is introduced at primary education levels, pose severe threat for the future of the child. Due to this the prevalence is noticed greater among children next to computer professionals. This has set forth the immense need of the study of this disease, demanding a highly effective remedy and a measure to check it and preserve the good vision.

Ayurveda renowned as the oldest system of medicine, promises health at any stage of life and its glory is due its authenticity and purity which has surplus of natural remedies for any newly arising challenging disorders. As its luxury includes rejuvenators and drugs that revitalize our whole body is advantageous over any other system of medicines. Moreover it is the only system, which helps in maintaining the homeostasis of the body by following proper regimens explained in it. Triphala Ghrita is one such promising formulation which is very beneficial in improving vision, curing any ocular ailments and restoring vitality of eye. Thus it is not only a cure for ocular ailments but also a prophylactic measure and a tonic to this visual sense organ.

Discussion on every point from the selection of the topic to the outcome of clinical trial was done to draw a proper conclusion. In India use of computers increasing rapidly day by day, and is the world third⁴ internet user country with over 145 million as on June 2012. So there is an urgent need to understand the dynamics of this problem and prevent it from assuming epidemic proportions. Avoidance of use of VDT (Video Display Terminal) is the only way to

get relief from this irritable condition, which is impossible in present technology dependent society.

Discussion on conceptual study:

The main causative factors behind the disease are

Asatmaindriyarthasamyoga

Pragyaparadha

Parinama

There are three type of asatmyaindriyarthasamyoga i.e. atiyoga, ayoyoga and mithayoga are responsible for producing disease. Facing the bright (glare of) screen for long duration is atiyoga of chakshurindriya. Work in low or improper lighting condition and seeing ill-defined object, we can consider as ayoyoga. Visualizing any object from very near or far distance, or seeing very small word is mithayoga of chakshurindriya. Pragyaparadh also play a key role behind the pathogenesis. It is clear that symptoms are much more associated with duration spend before screen, wrong screen and sitting position. Doing work without proper knowledge or continuing work despite of knowing its ill effect is called as pragyaparadha. All these lead to doshavaishmya and hence produce disease in eye. Vata, pitta and kapha, tridoshas are involves in this disease. Ocular symptoms like eye strain, double vision, eye fatigue and extraocular symptoms like neck, shoulder and back pain are due to vatadoshas. Redness of eye is due to pitta dosha and itching eye is due to kaphadosha. The symptoms are mainly from either dristigata or sarvagata netraroga. Vata-pitta doshas play a key role to produce symptoms like burning eye and headache emphasize

that the kaphadosha is the main apprehensive subject related to eye as it is the place of teja. So kaphadosha annihilating procedure should be done for beneficial purpose of eye.

CONCLUSION

Computer vision syndrome is vata-pitta pradhana tridoshaja vyadhi. Aasatmyaindriyarthasamyoga and pragyaparadha parinama are three main causative factors behind the pathogenesis, according to Ayurveda. Low distance of screen from eye, improper room light and low blinking rate are the main causative factors; Dryness of Eye, eye strain, Redness of Eye, itching, burning sensation of eye, blurring of image, Headache & neck/shoulder/back pain were the main symptoms and complaint for majority of patient. The disease is not related with refractory error, but intensity of signs, symptoms increase for those persons with incorrect or under correct refractory error. Vata-pitta sharirikprakriti users are the main victim of this disease. Rajasika manasika prakriti person are more prone to the disease. Young (18 to 30) educated adults are the main victims of the disease.

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.

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