AN OPEN LABELED RANDOMISED CLINICAL TRIAL ON EFFICACY OF HARITAKI MODAKA AND ABHIJEET TAILA IN THE MANAGEMENT OF COMPUTER VISION SYNDROME

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ABSTRACT

Computer Vision Syndrome is the new nomenclature to the visual, ocular, and systemic symptoms arising due to the long time and improper working on the computer. Computer Vision Syndrome is a repetitive strain disorder as defined by the American Optometric. With progressive increase in the usage of computers, the term Repeated Stress Injury has found a place in contemporary medical science. The ocular complaints experienced by computer users typically include eyestrain, eye fatigue, burning sensations, irritation, redness, blurred vision, and dry eyes, among others. This group of symptoms is called Asthenopia. The incidence of Computer Vision Syndrome is as high as 50% to 90% among the employees of computer occupation. The causes for the inefficiencies and the visual symptoms are a combination of individual visual problems and poor office ergonomics.

Material & Methods: In this clinical study on CVS, 60 patients were registered from Shalakya tantra OPD, and all of them completed the treatment. In Group A, 30 patients were prescribed Abhijeet Taila for Pratimarsha Nasya and in Group B, 30 patients were prescribed Haritaki Modak tablets internally and Abhijeet Taila for Pratimarsha Nasya. Results: In total, 20% and 33.33% patients got completely cured in Group A and B respectively. Discussion: Both the drugs were effective in managing the condition, but it was observed they were more effective when given together. Multi-centric studies with larger sample size on the same drugs should be carried out to evaluate the effect of the drugs and, also so that the observations can be noted well and can be better suggested.

KEYWORDS: Computer Vision Syndrome, Abhijeet Taila, Haritaki Modak, ergonomics, Repeated Stress Injury.

INTRODUCTION

The modernisation has eventually resulted in both advantages and disadvantages. The invention of computers which is transforming as an unavoidable gadget in the present era is also one such product of modernization. Though computers have increased the work efficacy, speed communications and have opened access to information like never before. But as the technology's power grows, so too the dangers that come with it. With changing work environments and progressive increase in the usage of computers, we encounter a newly emerged lifestyle disorder named “Computer Vision Syndrome”.

It is estimated that nearly 60 million people suffer from CVS globally, and that a million new cases occur each year[1]. Vision-related problems are the most frequently reported health-related problems, occurring in over 70% of computer workers[2]. Furthermore, about 76% of computer professionals in India reported musculoskeletal pain and discomfort in various epidemiological studies[3][4]. The prevalence rate of CVS varies in different studies but its prevalence rate seems higher when analyzed altogether.

CVS is a group of symptoms which occur due to extended viewing of the VDT, when the demands of the task exceed the abilities of the viewer. Symptoms comprising CVS are dry and irritated eyes, eye strain/fatigue, blurred vision, red eyes, burning eyes, excessive tear secretion, double vision, headache, light or glare sensitivity, contact lens discomfort, slowness in changing focus, changes in colour perception, and neck, shoulder and backache. These symptoms of CVS are due to ocular (ocular-surface abnormalities or accommodative spasms) and/or extra ocular (ergonomic) aetiologies. These symptoms of CVS are due to ocular (ocular-surface abnormalities or accommodative spasms) and/or extra ocular (ergonomic) aetiologies.
The current understanding upholds meticulous work environment as a precaution and use of artificial tear or contact lens wetting solutions to suffice the symptoms. But with these treatments, the patients of CVS get only symptomatic relief.\[^{[3]}\] Computer Vision Syndrome is a modern ailment but it can be effectively managed on the basis of Ayurvedic principles. On critical analysis of Doshas, this disease is known to be a Vata-Pitta disorder. For maintaining good vision, therapeutic measures like Kriya Kalpa, Shamana, Chakhushya and Rasayana Aushadhis etc, which improves the homeostasis and ocular strength can be used. So, to find a better solution and to evaluate efficacy of Haritaki Modaka and Abhijeet Taila for the management of Computer Vision Syndrome, this study was designed.

**Drug Selection**

CVS according to our present-day knowledge seems to be a group of Vata-Pitta dominant ocular symptoms. So, we needed such drugs which can pacify Vata Pitta Dosha as well as they provide nourishment to eyes. So, the drugs Haritaki Yoga and Abhijeet Taila were selected. Haritaki Yoga\[^{[5]}\] contains Haritaki, Mridwika and Sita in equal parts. Abhijeet Taila\[^{[7]}\] contains Amalaki, Yashtimadhu and Murchhita Tila Taila. Both these ocular drugs act on the Chakshurendriya thereby, strengthening the Indriyas and correcting the pathology from the root. There have been no studies conducted showing the effect of Nasya on Computer Vision Syndrome till date. So, Pratimarsha Nasya was selected as the treatment modality in this lifestyle-based disorder. Pratimarsha Nasya is mentioned as a Dinacharya regime by Acharyas and also it has better compliance.

Both the drugs were procured from the GMP certified company and were analyzed from PLIM Ghaziabad before dispensing for assessing the authenticity of the drug.

**AIMS AND OBJECTIVES**

The aim of present research was to evaluate the efficacy of Haritaki Yoga (Modak) and Abhijeet Taila (Pratimarsha Nasya) in signs and symptoms of Computer Vision Syndrome.

**MATERIALS AND METHODS**

**Study Design**

In this clinical study, 60 patients from the Out-Patient Department of Shalaka Tantra of AIIA who were suffering from CVS and fulfilling the criteria of inclusion for the present study, were registered and divided randomly into two groups. An elaborative research proforma was specially designed for the purpose of incorporating all aspects of the disease on Ayurvedic and modern parlance. Selected patients were randomly divided into two groups with the following drug schedule in a particular group:

**Group A**: Ergonomics counseling along with Abhijeet Taila Pratimarsha Nasya, 2 drops in each nostril in evening at fixed time daily for 21 days and;

**Group B**: Ergonomics counseling along with Haritaki Yoga 6gms orally with luke warm water at bedtime and Abhijeet Taila for Pratimarsha Nasya 2 drops in each nostril in evening at fixed time daily for 21 days.

**Diagnostic Criteria**

To evaluate the Chakshushya activity of both the drugs, whole importance was given to the subjective complaints as no particular objective findings have been mentioned or available for diagnosis of this disease so far. So, in this present study, routine haematological investigations, routine eye examination including visual acuity, slit lamp examination, Schirmer’s and TBUT were carried out before commencing the treatment to exclude any other ocular pathology.

**Inclusion Criteria**

1. Patients between 16 - 40 years of age
2. Patient having minimum three symptoms of Computer Vision Syndrome.
3. Minimum three hours’ exposure to any type of Video Display Terminals like desktop, laptop or both daily.

**Exclusion Criteria**

1. Patients not willing to participate in the study.
2. Patients having other systemic disease or metabolic disorders such as hypertension, diabetes mellitus and thyroid and any other illness necessitating long terms drug treatment.
3. Patients having any pathological conditions such as optic atrophy, diabetic retinopathy and hypertensive retinopathy.
4. History of any surgical intervention to eye.
5. Persistent contact lens users.
6. Patient with history of Migraine
7. Pregnant and lactating females

**Criteria for Assessment**

A specialized scoring pattern for assessment of chief complaints of CVS examination was prepared by giving scores to various presentations of CVS. The obtained data on the basis of observations were subjected to statistical analysis. Student's paired "t" test was carried out for all subjective parameters (clinical features). The results were interpreted at the level of P < 0.001 as highly significant, P < 0.01 as moderately significant, P < 0.05 as significant and P > 0.05 as insignificant.
OBSERVATIONS AND RESULTS

General Observations on Nidanas

Among the general causative factors for Netra Rogas available in our classics, the number of listed out factors are more than 30 and among them only 6-7 are commonly observed in the patients of CVS. The maximum number i.e. 34 (56.66%) patients were short tempered, Shoka (grief) was observed in 51.66% patients and 51 (85%) patients were complaining of headache and 49 (81.66%) patients complaints of eyestrain.

Some other general observations

In the present study, the maximum patients (35%) were between 25 and 31 years of age and male (55%) predominance was observed. The maximum patients (61.66%) were graduates and majority of the cases (66.66%) were service persons, followed by 33.33% students. Majority of patients were having Vata-Pitta dominant Prakriti. Majority of the patients, i.e., 51.66% reported to work for a maximum of 07-10 hours/day on computer. The results on chief complaints are shown in Table 1, 2.

Table 1: Effect of therapy on chief complaints in patients of Computer vision syndrome in Group A

| S.No. | Symptoms                  | Group A | Remarks       |
|-------|---------------------------|---------|---------------|
|       |                           | No.of patients | % relief | p Value         |
| 1.    | Eye strain                | 30      | 57.77%       | p<0.01 | Highly significant |
| 2.    | Headache                  | 26      | 46.66%       | p<0.01 | Highly significant |
| 3.    | Blurring of vision        | 23      | 50%          | p<0.01 | Highly significant |
| 4.    | Burning sensation in eyes | 24      | 32.77%       | p<0.01 | Highly significant |
| 5.    | Red eyes                  | 11      | 32.77%       | p<0.01 | Highly significant |
| 6.    | Irritation                | 20      | 45.40%       | p<0.01 | Highly significant |
| 7.    | Excessive secretion       | 12      | 26.66%       | p=0.0003 | Significant |
| 8.    | Double vision             | 04      | 13.33%       | p=0.05 | Significant |
| 9.    | Light or glare sensitivity| 04      | 6.66%        | p=0.03 | Significant |
| 10.   | Slowness in changing of focus | 03   | 10%          | p=0.10 | Not significant |
| 12.   | Fatigue in neck, shoulder and back | 07 | 17.22%       | p=0.008 | Significant |

Table 2: Effect of therapy on chief complaints in patients of Computer vision syndrome in Group B

| S.No. | Symptoms                  | Group B | Remarks       |
|-------|---------------------------|---------|---------------|
|       |                           | No.of patients | % relief | p Value         |
| 1.    | Eye strain                | 30      | 76.11%       | p<0.01 | Highly significant |
| 2.    | Headache                  | 25      | 62.77%       | p<0.01 | Highly significant |
| 3.    | Blurring of vision        | 27      | 78.33%       | p<0.01 | Highly significant |
| 4.    | Burning sensation in eyes | 25      | 51.11%       | p=0.0006 | Significant |
| 5.    | Red eyes                  | 13      | 43.88%       | p=0.0006 | Significant |
| 6.    | Irritation                | 21      | 61.66%       | p<0.001 | Highly significant |
| 7.    | Excessive secretion       | 10      | 33.33%       | p=0.002 | Significant |
| 8.    | Double vision             | 06      | 18.33%       | p=0.022 | Significant |
| 9.    | Light or glare sensitivity| 04      | 13.33%       | p=0.050 | Significant |
| 10.   | Slowness in changing of focus | 04   | 13.33%       | p=0.057 | Significant |
| 12.   | Fatigue in neck, shoulder and back | 10 | 28.88%       | p=0.002 | Significant |
When computed statistically Group A with Group B by using unpaired student t’ test, Group B patients showed significant improvement \((P < 0.01)\) in the symptoms, blurred vision. It was found that there was significant improvement seen in tests like Schirmer’s and TBUT which is shown in Table 3 - 6.

**Table 3: Effect of therapy on Schirmer’s in patients of Computer vision syndrome in Group A**

| Parameter | Group A | Remarks          |
|-----------|---------|------------------|
| SCHIRMERS | % of relief | P                |
| RIGHT    | 3.21%   | P<0.01           | Highly significant |
| LEFT     | 3.97%   | P<0.01           | Highly significant |

**Table 4: Effect of therapy on Schirmer’s in patients of Computer vision syndrome in Group B**

| Parameter | Group B | Remarks          |
|-----------|---------|------------------|
| SCHIRMERS | % of relief | P                |
| RIGHT    | 4.69%   | P<0.01           | Highly significant |
| LEFT     | 5.60%   | P<0.01           | Highly significant |

There was significant improvement seen in both group A and group B. But group B with Abhijeet Taila Pratimarsha Nasya and Haritaki Modak have shown better results.

**Table 5: Effect of therapy on TBUT in patients of Computer vision syndrome Group A**

| Parameter | Group A | Remarks          |
|-----------|---------|------------------|
| TBUT      | % of relief | P                |
| RIGHT    | 4.88%   | 0.003            | Significant      |
| LEFT     | 6.95%   | P<0.01           | Highly Significant |

**Table 6: Effect of therapy on TBUT in patients of Computer vision syndrome Group B**

| Parameter | Group B | Remarks          |
|-----------|---------|------------------|
| TBUT      | % of relief | P                |
| RIGHT    | 5.57%   | P<0.01           | Highly Significant |
| LEFT     | 6.99%   | 0.0002           | Significant       |

There was significant improvement seen in both group A and group B. But group B with Abhijeet Taila Pratimarsha Nasya and Haritaki Modak have shown better results.

**Total Effect of Therapy**

In Group A, moderate improvement was observed in maximum, i.e., 40% patients, marked improvement in 23.33% patients, mild improvement in 10% patients, 20% got cured and 7.66% remained unchanged.

In Group B, moderate improvement was observed in maximum, i.e., 23.33% patients, marked improvement in 16.66% patients, mild improvement in 23.33% patients, 33.33% got cured and 3.33% remained unchanged.

**DISCUSSION**

Total 60 number of patients were enrolled and all of them completed the trial. Maximum patients were between the age group of 25-31 years. This may be due to increases exposure of youngsters to VDTs and also as most software professionals work under highly competitive and stressful environment. These occupation leads to occupational hazards like low blink rate due to VDT use, long working hours, suppression of urges, exposure to direct air of AC (Pravata Sevana) etc which are major causative factor for CVS in present study.

These professions demand long working hours on computer which involves constantly straining their eyes during working due to continuous exposure to monitor, or to bright contrast, or by viewing objects from a distance of less than 6 inches or by working in improper way, with poor visual hygiene and improper office ergonomics. All the Nidanas like Shoka, grief etc, increases the stress factor in the individual. Also, the competitive...
environment and tiring work tasks effects the visual status of the individual.

It is found during this clinical study the patients of the CVS came with dry eye sensation and red eye sensation in eyes as presenting complaints. It was observed that Schirmer’s and TBUT of those patients had markedly reduced. In normal reading the eyes look downward causing the lids cover the part of the cornea minimizing the evaporation of tear. While on the computer work computer user view it in a horizontal gaze causing wider opening of palpebral fissure that's leads to increased evaporation through exposed area[8]. It can be said that due to constant staring on computer screen without blinking for long time leads to evaporation of lipid layer that makes the tear film unstable which causes vitiation of Pitta Dosha and produce dry eyes sensation and redness in eyes.

Findings of both the groups suggest that selected drugs are effective, but better results were observed in group B where both the drugs were given to participants. This can be because administration of Pratimarsha Nasya alone is not sufficient to manage the disease. Hence, administration of Chakshushya, Rasayana and Vata Pitta Shamaka drugs both in oral and nasal drop form effectively managed the condition.

**Probable Mode of Action**

In Ayurvedic text the action of drug is based upon the Rasapanchaka (pharmacodynamics) of the drug. Haritaki Yoga contains Haritaki, Mridwika and Sita in equal parts and all these drugs are having Rasayana, Chakshushya and Tridhosha Shamana properties. Haritaki is having Vata Anulomana property due to which it helps in relieving the spasm of eye. Draksha is having purgative and laxative property that helped in relieving constipation, a common complaint which was observed in cases of Computer Vision Syndrome due to their sedentary lifestyles.[9] All the contents of Haritaki Yoga are Madhura rasa, Madhura Vipaka and Sheeta Virya, due to which it mainly acts as Vata Pitta Shamaka and Netraprasadaka.

Abhijeet Taila by virtue of its Vyavayi and Vikasi Guna, it enters the minute channels and provides nourishment at cellular level. It contains drugs like Amalaki and Yashtimadhu which provides nourishment and strengthens the eye as a whole due to their Chakshushya, Rasayana and Balya properties. Nasya cleanses the minute channels so, daily application of Pratimarsha Nasya will prevent the accumulation of vitiated Kapha in the minute channels of the eye. In the Phalaprapti of Pratimarsha Nasya, Acharya Vagbhata has mentioned Klama-nasha i.e., it reduces the fatigue and eye strain, produced by continuous work on computer. It improves the vision hence, can be useful in relieving the symptoms like blurred vision, difficulty in focusing, double vision, and eye strain when practiced daily.

Thus, both the drugs help to increase the ocular strength, which in turn increases the organ’s capacity to overcome its pathological condition.

**CONCLUSION**

Computer has become an integral part of office equipment’s. Because computer use is such a high visual demanding task, vision problems and symptoms have become very common at today's workplace. The symptoms can vary but mostly include eye strain, headache, dry and irritated eyes, light sensitivity and double vision. The causes for these symptoms are a combination of individual problems, poor workplace conditions and improper work habits.

Computer users are invariably exposed to the risk of developing CVS leading to marked deterioration in performance owing to the severity and persistence of disorders. So, abstinence from cause is the ideal solution but it is far from practicality in the case of CVS.

Introducing Pratimarsha Nasya is a healthy habit that everyone should inculcate into his/her life. It provides nourishment to all the senses especially visual sense. It has better compliance, less time consuming and without any complications.

Multi-centric studies with larger sample size on the same drugs should be carried out to reevaluate the effect of the drugs and, also so that the observations can be noted well and can be better suggested.

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