

## CLINICAL STUDY OF THE MANAGEMENT OF COMPUTER VISION SYNDROME WITH MAHATRIPHALADI GRITHA

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### ABSTRACT

**Introduction:** CVS is an RSI and an occupational hazard due to overuse of computers. Till now no proper understanding has been achieved as it is an eventful pathology with no clear features.

**Need for the study:** To draw a line of treatment for any disorder it is essential to understand the manifestation of the condition based on Ayurvedic principles. **Aim:** To evaluate the efficacy of Mahatriphaladi Gritha in the management of CVS.

**Objective:** To evaluate CVS based on Ayurvedic principles and to evaluate the efficacy of Mahatriphaladi Gritha administered in two different routes namely oral and topically in the form of tharpana. **Material and Method:** Mahatriphaladi gritha prepared as per Bhaishajya Rathnavali; Netrarogadhikara 14<sup>th</sup> chapter was used as medicine for the condition termed computer Vision Syndrome. Sample size of this research work was 120, with 30 in each group comprising of four groups designated by A, B, C including a control Group.D. Group.A was treated with tharpana of MTG for 5days, Group.B with tharpana of 5days followed with oral administration of same for a month. Group.C with only 10ml oral administration of MTG and Control Group.D with instillation of distilled water drops for a month. **Plan of the study: Literary work:** Study of CVS revealed that it is a RSI occupational hazard which left untreated leads to eventful pathology. Based on fundamentals of Ayurveda, it is a vatapitta pradhana vikara of netra affecting pratham and dwithiya patalas of netra i.e., Conjunctiva and Cornea. **Clinical study:** Clinical study proved the efficacy of Mahatriphaladi gritha in the management of CVS when administered as bahya sneha in the form of tharpana followed with abhyantara sneha by oral administration. **Observation:** Observations made throughout this clinical study were recorded and represented in the form of charts, bar diagrams and graphical representation wherever necessary. **Discussion:** Data obtained by the study was subjected to ANOVA test to analyze the significance of treatment in various groups. Both subjective and objective parameters were also subjected to the test and significance drawn. **Conclusion:** Finally conclusion was drawn based on the literary work, observations of clinical study, assessment of results of treatment and statistical analysis.

**Key words:** Computer Vision Syndrome, Mahatriphaladi gritha, Repeated stress injury.

### INTRODUCTION

Computer has become a household gadget in all walks of life. The convenience has brought with it the disadvantages

as with any invention of human civilization. With progressive increase in the usage of computers, the term Repeated Stress Injury has found place in the contemporary

medical science. Computer vision syndrome is an RSI medical jargon in general and vision problem in particular.” According to the American optometric Association (AOA), computer vision syndrome is “the complex of the eye and vision problems related to near work which are experienced during or related to computer use.” (19)

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. 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. (20, 21)

**Need for the study:** The incidence of CVS is as high as 50% - 90% amongst the employees of computer occupation. The catastrophic effect of CVS has resulted in low performance and extreme discomfort to the sufferer. Though the clinical features of the CVS are elusive to be interpreted as the manifestation of an eventful pathology, the problem is agonizing to the individual and as it comes in way of his routine work. The negligence could cost one's own career and upset their health. The current un-

derstanding upholds meticulous work environment as a precaution and use of artificial tears or contact lens wetting solutions to suffice the symptoms. (17)

**HYPOTHESIS:** Based on Principles of Ayurveda this newly arising entity can be understood as being caused due to aggravation of Pitta and Vata doshas in eyes which in turn derange other vital components like Kapha, Rasa, Raktha and Mamsa affecting pratham and dwithiya Patalas of eyes. Hence Mahatriphaladi gritha being the most potent ocular formulation which aims in restoring homeostasis and also de stresses the structures involved and rejuvenates them will prove as the best remedy in treating this condition.(2)

#### **CLINICAL STUDY**

**Source of sample and its collection:** Study was conducted in Tilak Ayurved Mahavidyalay and Tharachand hospital, Pune attached to the institution which is the centre for PhD studies.

Patients attending the OPD of Vaagdevi Ayurvedic College and hospital were also taken up

#### **Methodology:**

The sample size is 120 which were divided into four groups randomly with 30 cases each. Groups were depicted by the alphabets A, B, C & D respectively. Patients were selected randomly and distributed into four groups and treatment was advised without consideration of any factors. The fourth group designated as Group D in this study was subjected for administration of distilled water in the form of eye drops which is taken as a placebo. Patients were not allowed to compare their treatment or made aware of the complete study, but only consent was taken for the treatment given to them with completer knowledge of the procedure and its effect on the dis-

order. Hence, the study was a **Randomized Control Study by patient blind method.**

Ethical clearance was obtained from the institution ethical committee (IEC) of Tilak Ayurved Mahavidhyalay, Pune, as the study is a clinical study conducted on humans as subjects.

**Group A:** All the patients of this group were treated by tharpana procedure for 10mins using Mahatriphaladi Gritha for 5 days.

**Group B:** Patients of this group were subjected to tharpana with Mahatriphaladi gritha of 10mins for 5 days, followed with oral administration of 10ml of same gritha twice daily in empty stomach for the duration of one month. Timings were fixed as 7 am and 7 pm for oral administration of gritha and were advised to use hot water for all purposes.

**Group C:** Patients of this group were treated with oral administration of 10ml of same gritha twice daily in empty stomach for the duration of one month. Timings were fixed as 7 am and 7 pm for oral administration of gritha and were advised to use hot water for all purposes.

**Group D:** This was a control group and patients were on placebo of instillation of 2drops of distilled water into lower fornix twice daily for a period of one month.(5,6) Observations were made during the treatment and also during follow up period of a month with an intermittent recording of the conditions on 5<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>, 35<sup>th</sup>, 60<sup>th</sup> and 65<sup>th</sup> days for recurrences if any.

**AIM** Is to evaluate the efficacy of Mahatriphaladi gritha in the management of Computer vision syndrome.

**OBJECTIVES** To interpret CVS based on the principles of Ayurveda.

- To develop and evaluate proper ergonomics and therapeutic measures.

- Evaluate special non-surgical therapeutic measures known as tharpana one among the kriyakalpas as a management for CVS.
- Comparatively evaluate the efficacy of Mahatriphaladi gritha in the form of abhyanthara sneha i.e., oral administration and topically in the form of tharpana.

**Standardization of the formulation:**The formulation Mahatriphaladi gritha was subjected to analysis for its standardization. The test parameters included

1. Total aerobic bacterial count, : 175 Cfu/gm.

2. Yeast, moulds, E coli,Salmonella sp : Absent

Pseudomonas sp. and Staphylo - coccus aureus

1. Refractive index : 1.455

2. Acid value [to measure the : 2.8

3. Carboxylic acid groups (Rancidity causes increase in acid value)]

4. Saponification value [to measure : 157.08 the average molecular weight of fatty acids present]

5. Iodine value [for unsaturated : 30.4 fatty acids]

6. Thin Layer Chromatography which is a qualitative analysis to show whether the starting material has disappeared i.e. the reaction is complete, if any product has appeared and how many products are generated – Detection of 2 spots with Rf values 0.30 (grey) and 0.2 (pink).(1,18)

**Subjective parameters for the assessment of result:** Improvements in the symptoms of the disease noticed by the patient were considered as subjective parameter.

**Objective parameter:**

- Visual acuity test for distant and near vision were carried out to assess correction of refractive errors due to strain induced by computer use.
- Schirmer test to confirm the reduction in dryness of eyes: this test is devised to measure the aqueous tear production or tear flow in dry eye patients. Filter paper used in this study was Whatman's filter paper no.14.(16)
- Patients with more than 5 signs and symptoms of CVS, aged between 18 to 40yrs and with no history of previous disorders and current illness were taken for study.

**RESULTS AND OBSERVATIONS:**

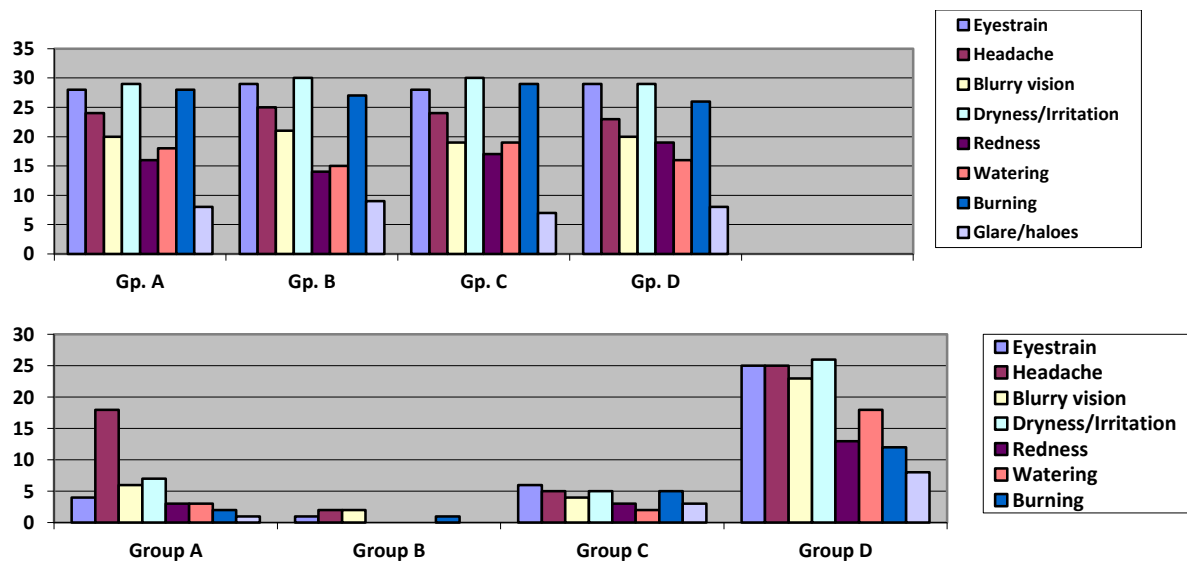
The formulation Mahatriphaladi gritha proved to be an excellent choice in the treatment of CVS. As the disorder is due to aggravation of vata and pitta doshas, Gritha proved to be the best form of preparation as it is already known to be the potent drug to alleviate pitta and being one among the chatursnehas was effective in alleviating vata also.

- Tharpana procedure being topical method of administration of drugs suf-

ficed the local signs and symptoms to a great extent in the stipulated period of 5 days. But complete and sustained relief was not found in the patients.

- When oral administration of the same gritha was carried out in Group.C, good results were achieved which was gradual as the duration of administration was one month. The results were almost similar to the tharpana of 5days. But result obtained was sustained and no recurrence was observed.
- When tharpana of 5days was coupled with oral administration of same for duration of one month results obtained were excellent with no recurrence and the effect was sustained. Hence this proved to be complete treatment in the management of CVS.
- Schirmer test: Significant improvements were noticed in Group.B. Partial results were recorded in Group.A and Group.C but no improvements were observed in control group D. Visual acuity: Significant results were seen in Group.B with good results in Group.C and Group.A.

**OBSERVATIONS BEFORE TREATMENT**



**OBSERVATIONS AFTER TREATMENT**

**Discussion based on observation of treatment:** In group A, where the patients

were treated with tharpana of Mahatriphaladi gritha for 5 days continuously, the results obtained were good but the treatment did not aim in complete cure and reduction in recurrence as the treatment duration was very short of 5days. Even though the procedure was potent enough to cure the disease the complete reversion of pathological manifestation did not take place by this procedure alone. And it was a remedy only for ocular manifestations. The results obtained were also not sustained. In group C, where the patients were treated only with oral administration of same gritha for a period of one month, gradual reduction in the pathological changes produced in the eye as well as of the body like body ache, fatigue and back pain were observed. The result was a sustained relief from the disease but here also there was lack of immediate relief from the disease. Not only this, the result achieved was partial in the visual apparatus. Among the patients of group B treated with initial 5 days of tharpana followed with a month of oral administration of the same gritha, excellent result was achieved at the end of the treatment course. After tharpana, most of the ocular discomforts were overcome and at the end of a month the remaining symptoms also disappeared and result was sustained thereby avoiding the recurrence. The ocular vitality drastically improved, and significant improvement in overall bodily discomforts was also noticed. The remaining group being a control group, where distilled water was used as eye drops similar to modern therapeutic measure to achieve lubrication of dry eye. In this group, temporary relief from symptoms was observed but after the course of treatment once again there was manifestation of same complaints in severe form.

**NULL HYPOTHESIS:** At the end of the treatment and follow-up of 65 days, when results were compared to the data obtained before treatment, mean value in Control Group.D showed only slight difference of 16.25 to the mean 21.25 obtained before treatment. Without Gp.D, ANOVA was 0.1 which indicates no difference between results in treatment groups. Null hypothesis was proved between treatment groups with slight variation in means.

**ALTERNATIVE HYPOTHESIS:** Statistically, significant improvements were recorded in all three treatment groups before and after treatment. In Gp.A, and Gp.C mean of 21.625 was obtained and in GP.B mean was 21.25 before treatment for subjective parameters. After treatment a mean of 0.75 was seen in Gp.B, followed by 4.125 in Gp.C and 5.5 in Gp.A. Even though results were satisfactory in Gp.C and Gp.A, excellent results were obtained in Gp.B. Hence results obtained in treatment groups proved Alternative Hypothesis statistically showing significant results after treatment. When ANOVA was applied with Gp.D, p-value was 6.1742 with greater significance, indicating significant difference between results in all four groups.

#### **CONCLUSION:**

- Evaluation of efficacy of drug: Mahatriphaladi gritha proved to be very effective in the management of CVS.
- When administered topically in the form of tharpana for 5days in Group.A and Group.B it showed significant improvements.
- In Group.C where oral administration of drug was carried out improvements were gradual and slow. Result obtained was sustained.



- Administration of Mahatriphaladi gritha by combined routes of administration showed best results.
- Hence to achieve immediate relief, tharpana proved better than oral administration.
- To achieve maximum benefits of the formulation and complete cure as well as sustain the results for nullifying recurrence tharpana followed with oral administration is recommended as peer of this study.
- This formulation, Mahatriphaladi gritha proved to be very beneficial in improving vision and overcoming dryness of eyes as it worked efficiently in alleviating vata and pitta doshas.
- It also works wonders in releasing the strain to intra and extra ocular group of muscles, headache due to spasm of temporal muscles, improving vitality of eye, and reversing the degenerative changes due to irradiation.

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**Source of support:** Nil

**Conflict of interest:** None declared