Efficacy of Yashtimadhu Ghritha Tarpana in Computer Vision Syndrome

Chaitra TM¹, Varun TV², Akshitha P³

¹Assistant Professor, Dept. of Kriya Sharira, Rajeev Institute of Ayurvedic Medical Science and Research Centre, Hassan, Karnataka, India.
²Assistant Professor, Dept. of Shalakya Tantra, Rajeev Institute of Ayurvedic Medical Science and Research Centre, Hassan, Karnataka, India.
³Post Graduate Scholar, Dept. of Rachana Sharira, SDM College of Ayurveda, Hassan, Karnataka, India.

ABSTRACT

Computer Vision Syndrome is the name given to eye problems caused by prolonged computer use including: Eye irritation (Dry eyes, itchy eyes, red eyes) Blurred vision, Headache. As we enter the 21st century, the growing use of Video Display Terminal (VDT) like Computer, Tablet, Smart phones etc. in the home and office brings with it an increase in health risks, especially for the eyes. One eye problem, called Computer Vision Syndrome (CVS), is affecting more and more people who find themselves constantly in front of Video Display Terminal. Symptoms of Computer Vision Syndrome include Headache, Blurred vision, Burning sensation, Fatigue, Dry eyes, Irritated eyes, Double vision, and Difficulty re-focusing the eyes. These symptoms can be further aggravated by improper lighting conditions and air moving fast the eyes. Dry eye is a major symptom that is targeted in the therapy of computer vision syndrome. Acharya Susrutha mentioned Tarpanam, Putapakam, Sekam, Acshyothanam, Anjana the Kriya Kalpas for Netra Rogas. Tarpana is indicated when the eyes are fatigue inactive, Sushka (dry), Ruksha (rough), injured, patients of Vata and Pitta vitiation, when there is squint, loss of lashes, clouded vision, difficulty in opening the eyes etc. conditions, Tarpana should be done to the patients.

Key words: Computer vision syndrome, Tarpana, Video Display Terminals.

INTRODUCTION

A group of ocular symptoms produced due to working with computer monitors are collectively known as computer vision syndrome. The ocular symptoms includes Decreased vision, Burning, Red eyes, Stinging and photophobia.[1]

According to the study of National Institute of Occupational Safety and Health, the computer vision syndrome (CVS) affects some 90% of the people who spent 3 hours or more at day on a Video Display Terminals (VDT).[2]

In the opinion of American Optometric Association, the treatment modalities followed for the management of Computer Vision Syndrome include Analgesics, Topical NSAIDs, Topical Steroids, Topical Cycloplegics, Topical Anaesthetics, and Sedatives. The treatment adopted in modern medicine is for symptomatic relief and no definite cure is promised.[3] If left untreated computer vision syndrome may leads to many serious complications like corneal opacity and corneal ulceration resulting to blindness. Hence there is a need to find a safe and effective medication.

Acharya Susrutha mentioned Tarpanam, Putapakam, Sekam, Acshyothanam, Anjana, the Kriya Kalpas for Netra Rogas.[4] Tarpana is indicated when the eyes are fatigue inactive, Sushka (dry), Ruksha (rough), injured, patients of Vata and Pitta vitiation, when there is squint, loss of lashes, clouded vision, difficulty in opening the eyes etc. conditions, Tarpana should be done to the patients.
opening the eyes etc. conditions, Tarpana should be done to the patients. Hence the procedure of Tarpana done in Computer vision syndrome.

In Chikitsamanjari, Yashtimadhu Sharkara Siddha Ksheerapaka Seka is mentioned as a Yoga for Vatapaithika Netra Rogas. In this clinical study this Yoga has been modified and made in the form of Ghrita for the purpose of Tarpana. Yashtimadhu is one among the Chakshushya Dravya and Ghrita is having Snigdha Guna, Madhura Rasa and Sheeta Veerya, Hence Tarpana with Yashtimadhu Ghrita is beneficial in reducing the features of computer vision syndrome.

By considering all these factors the study is carried out by doing the procedure of Tarpana with Yashtimadhu Ghrita in 15 patients.

**OBJECTIVES**

To evaluate the efficacy of Yashtimadhu Ghrita Tarpana in computer vision syndrome.

**METHODOLOGY**

**Methods of Collection of Data**

**Study Design**

Randomized comparative clinical study.

**Sample Size and Grouping**

A minimum 15 patients suffering from Computer Vision Syndrome were selected. Undergone Tarpana with Yashtimadhu Ghrita.

**Inclusion Criteria**

1. Patients having symptoms of computer vision syndrome will be taken for clinical trial irrespective of sex, caste, religion, socioeconomic status and chronicity.
2. Minimum 1 year exposure to any type of video display terminals.
3. Patients between 18 and 60 years of age.

**Exclusion Criteria**

1. Patients below 18 and above 60 years of age.
2. Patients those are unfit for Tarpana Karma.
4. Associated with any inflammatory and infective ocular conditions.
5. Both mechanical and chemical injuries

**Diagnostic Criteria**

On the basis of detailed signs & symptoms mentioned in books.

- Dry eyes
- Blurred vision
- Burning sensation
- Excessive tears

**Intervention**

Tarpana with Yashtimadhu Ghrita for 15 patients was carried out for 7 days.

**Poorva Karma**

Snehana, Shodhana of Kaya Shodhana (Vamana or Virechana) and Shodhana of Urdhavanga (Nasya).

**Pradhana Karma**

Akshi Tarpana is the procedure of pouring medicated ghee or other substances upon the eyes, by making a boundary over the extra orbital margin with paste of Masha Choorna. The eye is made to open and close several times for a specified duration on the basis of which part of eye is affected. After retaining for the stipulated time, the liquid is drained out through the hole made near the lateral canthus and the eye is irrigated by lukewarm water.

**Paschath Karma**

Dhumpapana (for Shesha Dosha Harana) and Akshi Bandhana with Pushpa.

**Duration:** 1000 Matra Kala (approximately 20 minutes), daily for 7 days.

**Follow up:** 14th, 21st day.

**Total duration:** 21 days

**Kala:** Morning
Schirmer’s strip test

Schirmer’s test uses paper strips inserted into the eye for 5 minutes to measure the production of tears. The exact procedure may vary somewhat. Both eyes are tested at the same time. Most often, this test consists of placing a small strip of filter paper inside the lower eyelid (inferior fornix). The eyes are closed for 5 minutes. The paper is then removed and the amount of moisture is measured. Sometimes a topical anaesthetic is placed into the eye before the filter paper to prevent tearing due to the irritation from the paper. The use of the anaesthetic ensures that only basal tear secretion is being measured. This technique measures basic tear function.

A young person normally moistens 15 mm of each paper strip. Because hypo-lacrimation occurs with aging, 33% of normal elderly persons may wet only 10 mm in 5 minutes.

Results of the Schirmer’s test

1. Normal which is >15 mm wetting of the paper after 5 minutes.
2. Mild which is ≥ 10 mm to ≤ 15 mm wetting of the paper after 5 minutes.
3. Moderate which is ≥ 5 mm to <10 mm wetting of the paper after 5 minutes.
4. Severe which is < 5 mm wetting of the paper after 5 minutes.

Assessment criteria

The subjective and objective parameters of base line data to pre and post medication will be compared with gradation for assessment of the results. All the result will be analysed statistically.

Subjective Parameters
- Dry eyes
- Blurred vision
- Burning sensation
- Excessive tears

Objective Parameters
Schirmer’s strip Test.

Table 1: Grading of Subjective and Objective Parameters.

<table>
<thead>
<tr>
<th>SN</th>
<th>Parameters</th>
<th>Grading</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Dry eyes</td>
<td>0- Normal (&gt;15 mm) &lt;br&gt; 1- Mild (11 to 15 mm) &lt;br&gt; 2- Moderate (6 to 10 mm) &lt;br&gt; 3- Severe (&lt;5 mm)</td>
</tr>
<tr>
<td>2</td>
<td>Blurred vision</td>
<td>0- No Blurred vision &lt;br&gt; 1- Blurred vision occurs after 1 hour of working and disappears after work. &lt;br&gt; 2- Blurred vision occurs after 1 hour of working and continues for 2 hrs. After withdrawal from work. &lt;br&gt; 3- Blurred vision continues for the whole day and relieved after sleep</td>
</tr>
<tr>
<td>3</td>
<td>Burning sensation</td>
<td>0- Absent. &lt;br&gt; 1- Occasionally present. &lt;br&gt; 2- Frequently present. &lt;br&gt; 3- Continuously present throughout the day.</td>
</tr>
<tr>
<td>4</td>
<td>Excessive tears</td>
<td>0- No watering. &lt;br&gt; 1- Only outdoor and watering in windy exposure. &lt;br&gt; 2- Outdoor watering not at indoor. &lt;br&gt; 3- Outdoor and indoor watering.</td>
</tr>
<tr>
<td>5</td>
<td>Schirmer’s test</td>
<td>0- &gt;15 mm &lt;br&gt; 1- ≥10 mm to ≤ 15 mm &lt;br&gt; 2- ≥ 5 mm to &lt;10 mm &lt;br&gt; 3- &lt;5 mm</td>
</tr>
</tbody>
</table>

Assessment and Progress

The clinical study was analysed after the treatment for the effect on subjective parameters.

Assessment of effect on subjective parameters

The effect of trial on clinical features was assessed on the following basis
- Good Response - >75% reduction in severity score
DISCUSSION

Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a Video Display Terminal (VDT) like Computer, Tablet, Smart phones etc. for protracted, uninterrupted periods of time. Symptoms of Computer Vision Syndrome include Headache, Blurred vision, Burning sensation, Fatigue, Dry eyes, Irritated eyes, Double vision, and Difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions and air moving fast the eyes. Dry eye was a major symptom that is targeted in the therapy of computer vision syndrome.

In the opinion of American Optometric Association, the treatment modalities followed for the management of Computer Vision Syndrome include Analgesics, Topical NSAIDs, Topical Steroids, Topical cycloplegics, Topical Anesthetics, and Sedatives. The treatment adopted in modern medicine is for symptomatic relief and no definite cure is promised. If left untreated computer vision syndrome may leads to many serious complications like corneal opacity and corneal ulceration resulting to blindness. Hence there is a need to find a safe and effective medication. So I selected the disease computer vision syndrome for my work.

The present clinical study was conducted at Shri. Vijaya Mahantesha Ayurveda Medical College, and R.P Karadi Ayurveda Hospital, Ilkal.

This study was carried out in 15 patients treated with the procedure Tarpana with Yashtimadhu Ghrita.

Yashtimadhu Sharkara Siddha Ksheerapaka Seka is mentioned as a yoga for Vata Paithika Netra Rogas. In this clinical study this Yoga modified and made in the form of Ghrita for the purpose of Tarpana.

Mode of Action of Drug

Yashtimadhu is one among the Chakshushya Dravya, and Ghrita is having Snigdha Guna, Madhura Rasa and Sheeta Veerya, hence application of Yashtimadhu Ghrita was beneficial in reducing the features of diseases of eye. So that it showed a better result in both Tarpana and Aschyothna procedures that I had conducted.

Go Ghrita and Go Dugda help to subside the vitiated Vata, Pitta Doshas.

Go Ghrita

Ghee is sweet, soft and cold in potency. Due to its cold property ghee mitigates Pitta, due to oil-ness it mitigates Vata and due to processing with other medicinal herbs it mitigates Kapha.

Vitamin A and E are anti-oxidants and are helpful in preventing oxidative injury to the body. Vitamin A keeps epithelial tissue of the body intact, keeps the outer lining of the eye ball moist and prevents blindness.

Cornea is lipophilic and Ghrita as lipid helps in absorption of drug.

Mode of action of Tarpana

As per Ashtang Hrudaya, sincere efforts should be made by every individual to preserve his or her vision till the last breath of life; because, for an individual who is blind, day and night are the same and this beautiful world is of no use to him even if he possesses a lot of wealth. Tremendous advancement made in ophthalmic medicine in recent years has begun a new era in history of ophthalmology. Modern ophthalmologists and scientists have been able to convince the new generation about the significance of eye care and the right procedure to follow in order to ensure healthy vision. At the same time, there are various challenging problems, arising before modern ophthalmologists compelling them to find therapeutic procedures hidden in ancient medical manuscripts. Clinical Shalakya-Tantra manages eye ailments via topical and systemic measures.

The clinical trial drug Yashtimadhu Ghrita has predominance of Madhura Rasa, Snigdha Guna, Sheeta Veerya and Rasayana. Considering the Dosha Haratva and Karmukata, the trial drug is Vata-Pitta Shamaka by virtue of its Rasa, Guna, Virya and
Thus, the overall effect of the compound drug is Vata Pitta Shamaka and hence it disintegrates the pathology of the disease computer vision syndrome, which is Vata Pittitika in its manifestation.

The Tarpana, topical applications play pivotal role. May be due to the limitations of systemic formulations to reach the target organ due to same blood-aqueous, blood-vitreous and the blood-retinal barrier, topical applications are inevitable in ophthalmology.

Basic principles of ocular pharmacology

The mechanism of action of Kriyakalpa can be understood in light of the following basics in modern pharmacology.

Routes of drug administration

In Kriyakalpa mucosal and cutaneous routes are commonly used. Mucous membrane is good absorbing surface.

1. Effect of Treatment on Dryness of Eye

Dryness was observed in almost all patients. The mean BT score in Group A was 3.93, reduced to 2.43 on 7th day, 1.97 on 14th day and 1.67 on 21st day respectively. The results were as p value < 0.05, there is significant difference in dryness of eye during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

The study shows that Tarpana with Yashtimadhu Ghrita were highly effective in relieving dryness of eye after application and there was even better gradual out-come with respect to the symptom in the 7days. In the follow-ups also there was no recurrence of dryness as the result sustained. 12 out of the 15 patients had good relief, 0 patients got mild relief and 3 patients got moderate relief from Dryness of eye, in which the result includes the follow-up also.

After all the calculation was done, it was explored that the variation of the Mean rank of Dryness of eye is less before and after treatment.

The ocular surface and tear secreting glands function as an integrated unit. Disease or dysfunction of this functional unit results in an unstable and poorly maintained tear film that causes ocular irritation symptoms like dryness of eyes and possible damage to the ocular surface epithelium. Hyper osmolality results due to decreased tear production (due to aging or certain medical conditions) or excessive tear evaporation (due to decreased blinking rate) of the ocular surface resulting in the Dryness of the eyes. Excessive smoke, dust and air-conditioned environment also play an important role in developing dryness.

Increase in Ruksha and Khara Guna of Vata along with the Teekshna Guna of Pitta results in Rukshatha of Netra. The Snigdha Guna and Vata Pitta Samana Karma of Go Dugda helps to reduce the Rukshatha of Netra.

According to Ashtanga Hrudaya

सवपिमिज्जावसातैलंनिेहेषुप्रवरंमतम् || (A.H.Su.16)
Sarpi, Majja, Vasa and Taila are considered best among oiling substances; among these Sarpi is the best.

Snigdha, Mrudu Guna and Vata Pitta Shamana Karma of Ghrita helps to reduce the Ruksha Gunaya thereby reducing the dryness. Snehana Aschyotana stimulates lipid secreting glands that form part of the tear film and prevents early evaporation.

Go Ghrita contains 36.4% proteins and rich in Vitamin A, Proteins which possesses Muco-adhesive properties and thus resembles tear mucus glycoprotein and lipid content in the Ghrita maintains the lubrication of ocular surface. Vitamin A keeps epithelial tissue of the body intact, keeps the outer lining of the eye ball moist. The anti-oxidant action of vitamin E protects the corneal and conjunctival epithelium.

2. Effect of Treatment on Blurred Vision

Blurred vision was observed in almost all patients. The mean BT score in Group A was 3.93, reduced to 2.40 on
7th day, 1.87 on 14th day and 1.80 on 21st day respectively. The results were as p value < 0.05, there is significant difference in blurred vision during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

The study shows that Tarpana with Yashtimadhu Ghrita were highly effective in Blurred vision after application and there was even better gradual outcome with respect to the symptom in the 7 days. In the follow-ups also there was no recurrence of Blurred vision as the result sustained. 11 out of the 15 patients had good relief, 0 patients got mild relief and 4 patients got moderate relief from Blurred vision, in which the result includes the follow-up also.

3. Effect of Treatment on Burning Sensation

Burning sensation was observed in almost all patients. The mean BT score was 3.90, reduced to 2.43 on 7th day, 2.03 on 14th day and 1.63 on 21st day respectively. The results were as p value < 0.05, there is significant difference in Burning sensation of eye during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

The study shows that Tarpana with Yashtimadhu Ghrita were highly effective in relieving Burning sensation of eye after application and there was even better gradual outcome with respect to the symptom in the 7 days. In the follow-ups also there was no recurrence of Burning sensation as the result sustained. 9 out of the 15 patients had good relief, 0 patients got mild relief and 6 patients got moderate relief from Burning sensation, in which the result includes the follow-up also.

Reduced tear production leads to inflammatory reaction and causes burning sensation due to inflamed meibomian glands, conjunctival goblet cells and glands of manz.[10] Instability of the lipid layer causes the evaporation of the aqueous layer that will leads to the dryness of the eyes and burning sensation. Abrasions to the corneal and conjunctival epithelium also cause burning sensation.

Due to increased Tikshna and Ushna Guna of Pitta along with Ruksha Guna of Vata in Netra, Daha will manifest as a symptom.

Acc.to Ashtanga Hrudaya

कः क्षीरोद्भवंतुसङ्ग्राहहरक्तवपत्ताक्षक्षरोगस्जत् ||
सङ्ग्राहहवातवपत्तासृक्क्षयाशोहदितकासजित् ||
श्रीरोद्वलुक्ष्याहिरक्षिताक्षिक्रोगम्मदितकासजित् || (A.H.Su.5/35)

Ksheerotthita Sarpi is used for this present study. Due to its Vata-Pitta Hara Karma, Chakshushya, Snigdha Guna and Sheeta Veerya properties it reduced the burning sensation.

4. Effect of Treatment on Excessive Tears

The mean BT score of Excessive tears was 3.87, reduced to 2.23 on 7th day, 2.00 on 14th day and 1.90 on 21st day respectively. The results were as p value < 0.05, there is significant difference in Excessive tears during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

The study shows that Tarpana with Yashtimadhu Ghrita were highly effective in Excessive tears after application and there was even better gradual outcome with respect to the symptom in the 7 days. In the follow-ups also there was no recurrence of Excessive tears as the result sustained. 22 out of the 30 patients had good relief, 0 patients got mild relief and 8 patients got moderate relief from Excessive tears, in which the result includes the follow-up also.

5. Effect of Treatment on Schirmers Test

The effect of treatment on Schirmers test within the study, BT to AT the p value (<0.001) was statistically highly significant in both the groups.

The Mean rank was higher thus, concluding that the effect of treatment, on Schirmers test in this study was better.

Schirmers test is an objective measure of the lacrimal secretory capacity. When tear production lowers to a certain point, the eyes can become dry and easily irritated and inflamed which can be objectively assessed with Schrirmer’s strip.[11]
**Tarpana** procedure helped in breaking the pathogenesis as explained for subjective parameters will gradually help in improving the readings on Schirmer’s strip. 70% patients got improvement in Schirmer’s test.

**Table 2: Symptom wise result in the study**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Relief in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dryness of eye</td>
<td>87%</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>87%</td>
</tr>
<tr>
<td>Burning Sensation</td>
<td>80%</td>
</tr>
<tr>
<td>Excessive tears</td>
<td>87%</td>
</tr>
<tr>
<td>Schimer’s Test (Right Eye)</td>
<td>100%</td>
</tr>
<tr>
<td>Schimer’s Test (Left Eye)</td>
<td>100%</td>
</tr>
</tbody>
</table>

From above table it is clear that, this study shows better result in each symptom. So, the procedure of **Tarpana** with **Yashtimadhu Ghrita** is significantly effective with in Computer Vision Syndrome. So, it is understood that “There is a significant effect for **Yashtimadhu Ghrita Tarpana** in condition of computer vision syndrome”.

**CONCLUSION**

CVS is one among the commonest disease in present era. Duration of computer work and exposure to any other Video Display Terminal (VDT) is directly proportional to the severity of symptoms in CVS. The **Ayurveda Sidhantas** are formulated, time tested and applied since centuries to understand diseases, and to plan their management. This present study have the following points as a befitting conclusion proving that Ayurveda **Sidhantas** are eternal and can be applied in understanding newer diseases like Computer Vision Syndrome. **Asatmendriyartha Samyoga, Atiyoga of Chakshurendriya** like watching highly luminous, fast moving flashing colors for a prolonged time have been mentioned in classics and has been validated in understanding the etiological factors of CVS. **Chakshshya Yoga** selected in this study has proved that they are beneficial in diseases, where **Nidana Parivarjana** is not completely possible in day today life. Because many are using VDT as a part of their work, some peoples used for entertainment purposes, some used VDT for study purpose. The **Siddhanta Nidana Parivarjanameva Chikitsa** is validated in the present study. If the diseases are treated in **Poorva Roopavastha** itself, they don’t become severe. This **Siddhanta** is validated in CVS also, like all other diseases. **Yashtimadhu Ghrita** is found to be beneficial in reducing signs and symptoms of CVS and beneficial for eyes during and after treatment. The Aim of the study was to evaluate the effect of **Yashtimadhu Ghrita Tarpana** in patients and results were assessed based on the subjective and Objective parameters and more effective in CVS. The causative factors and signs and symptoms of CVS explained by different Authors were majorly observed with the patients during clinical study. After statistical analysis conclusions has done by analysing the data of pre and post medication on subjective and objective parameters. In this study **Tarpana** with **Yashtimadhu Ghrita** shows significant results in subjective and objective parameters. No complications were noticed during various steps of treatment.

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