ABSTRACT

Anukta Vyadhi is described in 18th chapter of Sutrasthana in Charaka Samhita. It can be assumed as Computer vision syndrome which is main cause of dry eye syndrome in present era. Computer vision syndrome (CVS) is a temporary condition resulting from focusing the eyes on a computer display for protracted, uninterrupted periods of time. Some symptoms of CVS include headaches, blurred vision, neck pain, redness in the eyes, fatigue, eye strain, dry eyes, Tarpana therapy by Jivantiyadi Ghruta produced similar results in sign and symptoms of dry eye when compared with artificial tear drops Thus, the results obtained in clinical studies are highly encouraging and pave the way to find out toxicity free and cost effective Ayurvedic management.

KEYWORDS: Computer vision syndrome, Tarpan karma and Jivantiyadi ghruta.

INTRODUCTION

Computer vision syndrome (CVS) is a temporary condition resulting from focusing the eyes on a computer display for protracted, uninterrupted periods of time. Some symptoms of CVS include headaches, blurred vision, neck pain, redness in the eyes, fatigue, eye strain, dry eyes, irritated eyes, double vision, vertigo/dizziness, polyopia, and difficulty refocusing the eyes.
These symptoms can be further aggravated by improper lighting conditions (i.e. glare or bright overhead lighting) or air moving past the eyes (e.g. overhead vents, direct air from a fan). There are a number of factors that determine the amount of strain that the person feels as he work on a computer, including lighting in the room, distance from the screen, glare on the screen, seating posture and the angle of head or any existing vision problems. One or all of these may combine to cause an uncomfortable amount of strain on eyes.

Following are 10 tips to avoid Computer Vision Syndrome. By using these tips any one can prevent occurrence of Computer Vision Syndrome.

1. Moving the computer monitor away from the window.
2. Adjusting the monitor height.
3. Checking the eye contacts.
4. Adjusting the computer display.
5. Taking breaks.
6. Adjusting monitor distance.
7. Regular checkups.
8. Using proper lighting indoors.
10. Affix paper documents so they are in line with your monitor.

AIMS AND OBJECTIVES
1. To assess the difference in specified parameters of the dry eye due to computer vision syndrome.
2. To compare the efficacy of Tarpana therapy with a control drug i.e. modern therapy in the management of dry eye.

MATERIAL AND METHODS
Following materials & methods were employed for conducting the present research project.

1. STUDY DESIGN
   It was a randomized, open, controlled, clinical, interventional trial on human subjects.

2. STUDY POPULATION
   The study population was collected from the outdoor patient and indoor patient of Department of Shalakya tantra and Department Of Ophthalmology, Sir Sunderlal Hospital,
Institute of Medical Sciences, Banaras Hindu University, Varanasi after obtaining informed consent from patients.

3. SAMPLE SIZE AND SELECTION CRITERIA
Twenty patients of computer vision syndrome were registered, as per criteria of inclusion and exclusion.

1. Inclusion Criteria
a) Patients with the symptoms of dry eyes caused due to computer vision syndrome
b) Patients who show score for dry eye on the Schirmer’s test 1 and Tear film break-up time.
c) Patients in the age group of 15-70 years of either sex.

2. Exclusion Criteria
a) Patients below 15 and above 70 years of age.
b) Dry eyes due to direct physiological effect of a substance (e.g. wind, dry climates, smoke, air conditioning and medication) or a general medical condition (such as Sjögren’s syndrome, Rheumatoid arthritis, Diabetes, Thyroid problems, Herpes zoster and Collagen vascular diseases).

4. DRUG DESCRIPTION
The Tarpana Karma[4] with Jivantyadi Ghruta[5] has been selected as trial drugs and conventional treatment i.e. Artificial tears was selected as a control drug in this present research work for evaluating their roles in the management of a series of patients of Dry eyes who were selected on the basis of specialized Performa prepared for this purpose.

I. Tarpana Karma with Jivantyadi Ghruta[6]

1. Dose
10 ml in each eye once a day for 10 minutes in morning hours before meal.

2. Duration
2 months (3 days Swedana Karma of Urdhvajatroo followed by 7 days Tarpana Karma followed by gap of 10 days and this cycle were repeated for total 3 times) Follow ups- On 0 day i.e on day of admission 20th, 40th and 60th day of trial.
Method of Tarpana Karma

i) Patient who underwent Tarpana Karma was firstly subjected to Swedana Karma of Urdhvajatroo region followed by Nasya Karma by Khadabindu Taila. 2 drops were poured in each nostril. This process was followed for three days. After three days Tarpana Karma was started.

ii) Patients with empty stomach were lied down on his back in a room which is free from sunlight, blast of wind, dust and the process was done in the morning hours.

iii) A firm, circular wall of paste of Urada pulse powder around the eye should be made. It is applied to each around it.

iv) 10 gm of Ghruta Manda is slightly heated in warm water and transformed into liquid should fill up the ocular cavity up to the tip of eye lashes.

v) The duration of keeping Ghruta Manda in the eyes was 10 minutes.

vi) After the completion of Tarpana therapy Sneha should be drained by the outer canthus (temporal side) of the eye and should be cleaned by luck warm water.

II. Carboxymethylcellulose eye drop

1. It is an artificial tear eye drop
2. Dose- one drop 8 times per day
3. Duration- 2 months.
4. Follow ups- On 0 day i.e on day of admission 20th, 40th and 60th day of trial.

III. Dose Schedule

1. Tarpana Karma with Jivantyadi Ghruta

3 days Swedana Karma of Urdhvajatroo followed by 7 days Tarpana Karma by pouring 10ml of Ghruta for 10 minutes in each eye followed by gap of 10 days and this cycle was repeated for total 3 times in morning hours before meal.

2. Artificial tear drops

One drop of artificial tear was administered 8 times per day.

IV. Duration of clinical trial

The duration of clinical trial was 60 days. All patients were followed up 0 day i.e. on day of admission than 20th, 40th and 60th day of trial.
5. EXPERIMENTAL GROUPING
20 registered patients of 40 Dry eyes with computer vision syndrome were divided into two subgroups i.e. GC1 and GC2 with 10 patients in each subgroup. 10 (20 eyes) Patients in this group were treated with Tarpana Karma with Jivantiyadi Ghruta for 10 days (3 days Swedana Karma of Urdhvajatroo region followed by 7 days Tarpana Karma) followed by interval of 10 days and this cycle was repeated for total 3 times in morning hours before meal and 10 (20 eyes) patients of dry eyes with blepharitis were administered artificial tear 1 drop eight times a day with the precaution of wearing sunglasses while going out in day time.

6. CRITERIA’S OF ASSESSMENT FOR DRY EYES
During trial and follow up study the patients were assessed on following parameters.

- Subjective Improvement.
- Objective Improvement.

7. CRITERIA’S FOR DIAGNOSIS
1. Improvement in Schirmer’s Test I.
2. Improvement in Tear Film Break-Up-Time.

The reading of all the parameters at each visit compared with the Pre-treatment (Baseline) reading. Finally the overall changes of each Control Group and treated group in blepharitis.

1. Diagnostic Method for Dry eyes
Following are the diagnostic methods for the dry eyes.
1. Schirmer’s test I & II.
2. Tear film break up time (BUT).

STATISTICAL METHODS USED IN THIS STUDY
Various observations made and results obtained were computed statistically to find out the significance of the values obtained and various conclusions were drawn accordingly.

Following tests were used for this statistical purpose.
1. Chi-square test-This test was used to obtain results for each group.
2. Friedman Test- This test is used for Inter group comparison.

All the calculation was performed with the help of SPSS Software. Both the tests was carried
out at p<0.05, p<0.01, p<0.001. The obtained results was interpreted as.

- Insignificant: P >0.05.
- Significant: P <0.05.
- Highly significant: P< 0.01, P < 0.001.

**Observation and result**

- All the results are calculated with the help of SPSS Software.
- For Nonparametric Data **Friedman Test** has been used and results are obtained for each group.
- For calculating the Inter group comparison **Chi- Square Test** is used.

**Table showing effect of Schirmer`s Test on right eye in the patients of Dry Eye WSR to computer vision syndrome (Friedman Test).**

<table>
<thead>
<tr>
<th>Group</th>
<th>Sub-group</th>
<th>Grade</th>
<th>No. of Cases</th>
<th>Within the Group comparison (Friedman Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>BT</td>
<td>F1</td>
</tr>
<tr>
<td>Group C</td>
<td>GC1</td>
<td>Normal</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>GC2</td>
<td>Normal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

In **Schirmer`s Test** on right eye of **GC1** in Group C, the number of patient in Normal grade were 3, 5 in Mild grade, 0 in Moderate grade and 2 in Severe grade before the treatment but after the treatment there were no patients in Mild, Moderate or Severe grade and all the patients were converted into Normal Grade. So, the result is highly significant with P value <0.001 and Chi- square value= 15.818.

In **Schirmer`s Test** on right eye of **GC2** in Group B, the number of patient in Normal grade were 1, 3 in Mild grade, 2 in Moderate grade and 4 in Severe grade before the treatment but after the treatment there were no patients in Mild, Moderate or Severe grade and all the patients were converted into Normal Grade. So, the result is highly significant with P value <0.001 and Chi- square value= 24.675.
Table showing effect of Schirmer’s Test on left eye in the patients of Dry Eye WSR to computer vision syndrome (Friedman Test).

<table>
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<tr>
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<th>No. of Cases</th>
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</thead>
<tbody>
<tr>
<td>Group C</td>
<td>GC1</td>
<td>Normal</td>
<td>3 8 8 10</td>
<td>Chi-square=15.818 P=0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>5 0 2 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>0 2 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>2 0 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GC2</td>
<td>Normal</td>
<td>1 3 6 10</td>
<td>Chi-square=23.368 P &lt;0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>5 3 4 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>0 4 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>4 0 0 0</td>
<td></td>
</tr>
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In Schirmer’s Test on left eye of GC1 in Group C, the number of patient in Normal grade were 3, 5 in Mild grade, 0 in Moderate grade and 2 in Severe grade before the treatment but after the treatment there were no patients in Mild, Moderate or Severe grade and all the patients were converted into Normal Grade. So, the result is highly significant with P value =0.001 and Chi-square value = 15.818.

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Table showing effect of Tear Film Break Up Time on right eye in the patients of Dry Eye WSR to computer vision syndrome (Friedman Test).

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<tr>
<td>Group C</td>
<td>GC1</td>
<td>Normal</td>
<td>3 7 8 10</td>
<td>Chi-square=14.143 P &lt;0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>7 3 2 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>0 0 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>0 0 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GC2</td>
<td>Normal</td>
<td>3 5 6 10</td>
<td>Chi-square=17.538 P=0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>7 5 4 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>0 0 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>0 0 0 0</td>
<td></td>
</tr>
</tbody>
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<td></td>
<td></td>
<td>BT  F1  F2  F3</td>
<td></td>
</tr>
<tr>
<td>Group C</td>
<td>GC1</td>
<td>Normal</td>
<td>4   7   10  10</td>
<td>Chi-square=12.000 P &lt;0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>6   3   0   0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>0   0   0   0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>0   0   0   0</td>
<td></td>
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<tr>
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<td>3   5   10  10</td>
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### DISCUSSION

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CONCLUSION

Following conclusion can be drawn from the current research project.

- Eye is most sensitive sense organ of the body.
- Various factor to affects the eye to cause eye diseases.
- Among various eye disorders described in Ayurveda Sushkakshipaka, Vataja Abhishyanda, Krimigrinthi, Pothaki etc is nearest term for dry eye.
- Aetiology of dry eye syndrome can be understood at the level of various deficiency of tear. The drug having effect on tear film layers may show symptomatic relief in dry eye.
- Tarpana therapy by Jivantiyadi Ghruta produced similar results in sign and symptoms of dry eye when compared with artificial tear drops.
- Thus, the results obtained in clinical studies are highly encouraging and pave the way to find out toxicity free and cost effective Ayurvedic management.
- Since the study was carried out with limited budget and time, the results of this study provide enough scope to future research scholars in the field of Ayurveda in general and Netra Rogas in particular to work in this direction.
- Since administration of Tarpana therapy by Jivantiyadi Ghruta did not witnessed any side toxic effect in a series of patients of dry eye, obviously these two Ayurvedic modalities can be employed for longer duration in the management of patients of dry eye.

Therefore it can be concluded that Tarpana therapy by Jivantiyadi Ghruta can be used effectively, separately or in combination together for the management of patients of Dry Eye WSR to computer vision syndrome safely.

REFERENCES


6. Ayurvedic Formulary of India (AFI) in Ghrutapreparation chapter.