

A CLINICAL STUDY ON SATAVARYADI COMPOUND ORALLY AND DURVADI ASCHYOTANA (EYE DROPS) IN THE TREATMENT OF "COMPUTER VISION SYNDROME"

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ABSTRACT

American Optometric Association (AOA) defines Computer Vision Syndrome as "A complex of eye and vision problems related to near work which are experienced during or related to computer use". The chief source of the problem lies in it being a **Repetitive Stress Injury (RSI)** to the visual system which means, rectifying the source of stress is overlooked and the negligence could cost one's career and upset the health. The causes for the inefficiencies of the visual symptoms are a combination of individual visual problems and poor office ergonomics. In this clinical study on "Computer Vision Syndrome", 60 patients were registered, out of which 59 patients completed the treatment. In Group A, 30 patients have been prescribed *Satavaryadi Compound* (orally) and *Durvadi Aschyotana* in eye drop form; in Group B, 15 patients have been prescribed the Carboxy methylcellulose (CMC) eye drops (Control group) and in Group C, 14 patients were counseled for changing the working style and standard. In Group A, marked improvement was observed in 80.00% patients, 53.33% patients were moderately improved in group B and 28.57% patients were moderately improved in group C.

Key Words: CVS, VDT, *Satavaryadi Compound*, *Durvadi Aschyotana*.

INTRODUCTION

A Video Display Terminal (VDT) is commonly known as Computer screen. The computer has become a common item in today's society. It is estimated that approximately 45 million workers directly use computers by staring into VDT's for hours continuously. Computers have increased the work efficiency, communications and have opened access to information like never before. Despite of these contributions to the society, prolonged exposure to VDT's has been the cause of a visual and ergonomic disorder called "Computer Vision Syndrome" (CVS)¹. CVS is a group of symptoms which crop up from the extended viewing of the video

display terminal (VDT). Symptoms of CVS include both ocular as well as systemic manifestations. Chief complaints in CVS comprises of eye strain, blurred vision, headache, redness, burning sensation, dry and irritated eye, slow refocusing, fatigue (neck/shoulder/back pain), dizziness and change in colour perception². It has also been shown that VDT users also have a higher incidence of complaints than non VDT users in the same environment (Udo et. al. 1991).

One survey on Computer Vision Syndrome was held in *Jamnagar* (India) in which total 1205 computer professionals were surveyed. Among them 485 peoples

were having the symptoms of CVS which means 40.24% of total surveyed population have shown the prevalence of CVS in Jamnagar³.

This problem is new in medical science and is under investigation to explain the mechanism of the disease and to find a solution. The available modern treatment only addresses the symptoms of ocular discomfort which occurs due to tear film defect caused by excessive computer use which is incomplete. CVS is a *Vata Pitta* dominant and *Kapha* depleting ocular cum systemic problem. So it needs complete therapeutic management local as well systemic; with this concept the present study was undertaken to see the role of topical lubricant eye drop and oral compound.

Drug Selection:

Eye diseases can be managed by two methods of treatment, i.e., topical and systemic (Internal). In the present study both these methods were used.

Most of the previous workers have adopted *Tarpana* as a local *Snehana* therapeutic procedure. *Tarpana* is a time and money consuming procedure which is quite unsuitable for the patients of CVS mainly comprising the working class as they cannot spare the time and follow the post-*Tarpana* regimen. Thus similar formulation which will be beneficial in the form *Snehana Aaschyotana* (eye drops) was proposed to save the time and cost of medicine as well as to have good compliance too.

Thus *Durvadi Ghrita* told by *Acharya Chakradatta* in *Raktha-Pitta Chikitsa* slightly modified by addition of *Yashtimadhu* for *Snehana Aschyotana* (EYE DROPS) was used which can save the time and cost of medicine.

The instillation of the drug in the conjunctival sac is considered as one of the important route for administration of the ocular formulation. Eye drops is the most convenient form among the four methods (eyedrops, eyeointment, gel, ocuserts) of delivering ocular pharmacotherapeutics. Moreover it provides fixed concentration of the drug. So eye drop was prepared in order to give better relief to the patient.

For internal administration most widely used drug, *Satavaryadi Churna* mentioned in *Yogaratanakara-Netra roga Chikitsa* was selected. It has also been modified by addition of *Saptamrita Laauha* and *Abhraka Bhasma*.

AIMS AND OBJECTIVES –

- To interpret **Computer Vision Syndrome** in the light of *Ayurvedic* principles.
- To evaluate the efficacy of *Durvadi Aschyotana* (eye drops) and *Satavaryadi compound* in the management of **Computer Vision Syndrome**.
- To compare the effect of trial drug with Carboxy methyl cellulose (CMC) eye drops & counselling of preventive measure in Computer Vision Syndrome.

MATERIALS AND METHODS

Study design:

In this clinical study, 60 patients from Out Patient Department of *Shalakyata Tantra* of I.P.G.T. & R.A., G.A.U, Jamnagar, who were suffering from Computer Vision Syndrome & fulfilled the criteria of inclusion for the present study were registered and divided randomly in three 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 three

groups with following drugs schedule in particular group-

- I. **Group A (Treatment Group):-** *Satavaryadi* Compound orally & *Durvadi Aschyotana* (Ayurvedic eye drops) topically.
No. of registered patients -30
- II. **Group B (Control Group):-** Carboxy methyl cellulose (CMC) eye drops.
No. of registered patients -15
- III. **Group C (Counseling Group):-** Counseling for changing the working style and standard.
No. of registered patients -15

Inclusion Criteria:

- All patients using computer at least **2 hours per day**, presenting with clinical features of Computer Vision Syndrome like **eye strain, blurred vision, headache, redness of eyes, burning sensation in eyes, dry eyes, slow refocusing, excessive fatigue (neck/shoulder/back pain)** were included in the present study.

Exclusion criteria:

- Patient unwilling for registration.
- Patients suffering from some systemic / metabolic disorder.
- Cases complicated with acute/chronic infections of lid, conjunctiva, cornea or sclera.

IEC and CTRI

The study was approved by IEC (IPGT/7-A/2012-2013/964) and registered with CTRI with reference no. REF/2013/12/006169.

Intervention

1. Posology

Satavaryadi Compound (*Yogratnakara-Netraroga*)

- ❖ *Satavaryadi* compound (powder) were 5 grams orally twice in a day with *Ghrita* and *Madhu*.

Durvadi Aschyotana (*Chakradutta Raktapitta Roga*)

- ❖ *Durvadi Aschyotana* were used as a eye drop one drop each eye twice in a day.

2. Duration - For 30 Days both *Satavaryadi* Compound and *Durvadi Aschyotana*

3. Follow Up - 15 days after the course of the treatment.

Criteria for Assessment:

Grading and scoring system was adopted for assessing each clinical feature before the commencement of trial and after completion of trial. A specialized rating scale for chief complaints of CVS was prepared. The obtained data on the basis of observations were subjected to statistical analysis. Chi square test was applied to the statistical data for evaluating the difference in the effects of two therapies, in two ways like symptom wise and total effect wise. The obtained results were interpreted as:

- ❖ Insignificant $p > 0.05$
- ❖ Significant $p < 0.05$
- ❖ Moderately Significant $p < 0.01$
- ❖ Highly Significant $p < 0.001$.

OBSERVATIONS AND RESULTS:

In present study, maximum patients i.e., 71.19% were between the age group of 16-35 years and male patients (77.97%) predominance was observed. Maximum patients (60.28%) were graduates and majority of cases (55.93%) were service persons followed by 47.56% student`s. Majority of the patients i.e., 74.58% reported to work on computer for 05-06hrs/day.

When computed statistically Group-A with Group-B by using Chi square test the Group-A have shown significant improvement (**p<0.001.**) in chief complaints over that of Group-C in maximum symptoms i.e., blurred vision, dry & irritated eye, redness. burning sensation and eye strain/ fatigue.

Group-B has shown statistically significant improvement ($p<0.05$) in chief complaints over that of placebo in three symptoms i.e., dry & irritated eye, excessive secretion of tears and light or glare sensitivity test, whereas in blurred vision and eye strain/fatigue significance was at

the level of $p<0.01$, and in burning eyes test has shown highly significant effect with $p<0.001$.

Effect of Therapy on Chief Complaints: by Sigma Ranked Wilcoxon Method(Signed Rank Test)

Percentage of improvement in Group A

No.	Chief complaints	n	BT Mean	AT Mean	Mean Difference	Percentage Relief	W Value	P Value
1	Eye Strain	30	1.9	0.26	1.63	85.96	-465	<0.001
2	Blurred Vision	28	1.33	0.30	0.83	73.53	-325	<0.001
3	Headache	26	1.56	0.46	1.10	70.21	-435	<0.001
4	Redness	28	1.10	0.13	0.96	87.88	-351	<0.001
5	Burning sensation	28	1.66	0.50	1.16	70.00	-465	<0.001
6	Dry & irritated eyes	30	1.9	0.30	1.60	84.21	-465	<0.001
7	Slow refocusing	23	0.8	0.16	0.63	79.16	-190	<0.001
8	Fatigue	24	0.96	0.13	0.83	86.20	-325	<0.001
9	Dizziness	11	0.36	0.66	0.30	81.82	-45	<0.01
10	Change in colour perception	13	0.43	0.03	0.40	92.30	-78	<0.001

Percentage of improvement in Group B

No.	Chief complaints	n	BT Mean	AT Mean	Mean Difference	Percentage Relief	W Value	P Value
1	Eye Strain	15	2.06	0.93	1.13	54.83	-120	<0.001
2	Blurred Vision	12	1.00	0.66	0.33	33.33	-21	<0.05
3	Headache	15	1.73	0.73	1.00	57.69	-91	<0.001
4	Redness	15	1.73	0.93	0.80	46.15	-105	<0.001
5	Burning sensation	14	1.93	1.06	0.86	44.82	-91	<0.001
6	Dry & irritated eyes	13	1.00	0.13	0.86	86.66	-78	<0.001
7	Slow refocusing	05	0.46	0.26	0.20	42.85	-100	<0.001
8	Fatigue	08	0.53	0.20	0.33	62.51	-15	>0.05

9	Dizziness	06	0.46	0.06	0.40	85.71	-15	>0.05
10	Change in colour perception	04	0.26	0.60	0.20	75.00	-78	>0.05

Percentage of improvement in Group C

No.	Chief complaints	n	BT Mean	AT Mean	Mean Difference	Percentage Relief	W Value	P Value
1	Eye Strain	14	1.71	1.21	0.50	29.16	-28	<0.05
2	Blurred Vision	12	0.92	0.64	0.28	30.76	-36	<0.01
3	Headache	10	1.00	0.50	0.50	50.00	-45	<0.01
4	Redness	11	1.28	0.64	0.64	50.00	-66	<0.001
5	Burning sensation	10	1.28	0.64	0.64	50.00	-66	<0.001
6	Dry & irritated eyes	12	1.28	0.57	0.71	55.55	-36	<0.01
7	Slow refocusing	06	0.57	0.35	0.21	37.50	-15	>0.05
8	Fatigue	09	0.64	0.57	0.07	11.11	-36	>0.05
9	Dizziness	02	0.14	0.07	0.07	50.00	-1	>0.05
10	Change in colour perception	02	0.14	0	0.14	100.00	-3	>0.05

Total Effect of Therapy:

In Group A- 2 (6.67%) patients showed complete remission, marked improvement in 24 (80%) patients and moderate improvement in 04 (13.33%) patients.

In Group B- 01(06.67%) patients showed marked improvement, moderate improvement in 08(53.33%) patients and mild improvement in 06(40%).

In Group C- 3(21.43%) showed unchanged effect, 7(50%) have shown mild improvement & moderate improvement was observed only in 04(28.57%) patients.

Overall effect of the Therapy:

Overall it has been observed that treatment in group A by *Satavaryadi* Compound & *Durvadi Aschyotana* (eye

drop) makes highly statistically significant difference at $p < 0.001$.

DISCUSSION

The incidence of Computer Vision Syndrome is as high as 50%-90% among the employees of Computer occupation⁴. It is estimated that approximately 45 million workers directly use computers, staring into VDT's for hours continuously⁵. Also number of investigators has indicated that visual symptoms occur in 75-90% of VDT workers.

Hence, Computer users are invariably exposed to the risk of developing 'Computer Vision Syndrome' leading to marked deterioration in performance owing to the severity and persistence of disorders.

Probable mode of action:

In *Ayurvedic* text the action of drug is based upon the *Rasapanchaka* (pharmacodynamics) of the drug. Maximum drug in *Satavaryadi* Compound having *Sheeta Veerya Madhura Vipaka Vata Pitta shamaka, Chakshusya Balya* and *Rasayana* properties.

The *Anupana* was *Ghrita* and *Madhu*. *Ghrita* contain *Madhura Rasa Guru Snighdha Guna Sheeta Veerya* and *Madhura Vipaka*. *Ghrita* is mainly *Vata Pitta shamaka* properties. While *Madhu* contains *Madhura Kashaya Rasa Laghu Ruksha Guna Sheeta Veerya* and *Katu Vipaka* with *Tridoshshamaka* property.

In CVS there is *Atiyoga* of *Chakshurendriya*, which leads to *Vata Pitta* vitiation i.e. *Vata Pitta vradhi*. They ultimately lead to *Dhatu Kshaya*. Therefore *Satavaryadi* Compound which is mainly *Vata Pitta shamka*, pacifies the vitiated *Vata Pitta* and *Rasayana* property perform the function of *Dhatuvaradhan*. Thus we can say that *Satavaryadi* Compound with *Madhu* and *Ghrita anupana* acts by improving the overall general health by pacifying the vitiated *Vata and Pitta*.

Durvadi Aschyotan have *Rasayana, Chakshushya, Vata-pitta shamaka* properties which is helpful in strengthening the first *Patala* (cornea & conjunctiva), reconstructing the *Ashru* (tear film) which decreases the dryness of eyes as well as enhance tear film stability. Moreover due to its lipid nature it lubricates the eyes surface and enhance the lipid layer of the tear film. It also work on *Dvitya patala*(second) to nourish and strengthen ciliary muscle which improves accommodation of the eyes. Thus *Durvadi Aschyotana* checks out the ocular manifestations by increasing the function integrity of the visual apparatus.

CONCLUSION

CVS in *Ayurvedic* perspective is concluded to be a *Vata Pitta* aggravated and *Kapha* depleted ocular cum systemic problem on the basis of logical application of *Ayurvedic* fundamental and tools suggested by *Acharya Charaka* and can be named as:-

1. *Parikalak Ativekshanjanya Samlakshanam.*

2. *Sanganak Atiprayogajanita Netra Roga*

- The available modern treatment only addresses the ocular surface symptoms which may be due to tear film defect owing to exposure to VDT. This concept is incomplete as it has no place for systemic problem.
- Changing the lifestyle by preventive measures and counseling is least effective but if used along with topical and systemic treatment can certainly add in study quality, quantity and time.
- The maximum result in group A (Treatment Group) rejects our null hypothesis that CVS is not a systemic problem and the oral medicine has no role to play it.
- No adverse effect of both the therapies was seen.

Thus it can be concluded that the *Ayurvedic* formulation *Durvadi aschyotana* (topically) & *Satavaryadi* compound (orally) is more effective in comparison to only topical medication or computer work related counselling.

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