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Research Article

TO STUDY THE EFFECT OF *NETRA-TARPAN* IN DRY EYE / COMPUTER VISION SYNDROME

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ABSTRACT

In modern era peoples are more exposed pollution due to industrialization. Many peoples have to outdoor jobs like marketing, salesmanship. Information technology is also growing fast and providing job opportunities to young generation. But drawback of this job is employees have to work on computer more than 8 hours daily. In these peoples due to outdoor jobs and prolonged computer work eyes get dry due to exposure to wind, sunlight, dust and lack of blinking during computer work which hampers formation of uniform tear film. This results in dryness of cornea which lead to blurring of vision during continuous work. Long standing conditions results in itching, redness and foreign body sensation in eyes which may include headache pain in neck and blurred vision. To treat these patients, *Ayurvedic* special therapy "*Netratarpan*" is one of the best option. Hence this therapy was selected for comparative study in treating patients having Dry eye / computer vision syndrome. Total 50 patients having Dry eye / computer vision syndrome and willing to participate in study were selected for each group i.e. experimental and control group. These patient were selected from patients attending OPD of Netra Vibhag, Shalakya Tantra department, Seth Sakharam Nemchand Jain Ayurved Hospital, Solapur. The study was carried at Seth Sakharam Nemchand Jain Ayurved Hospital, Solapur during Sep 2005 to Dec 2014. Group A was treated with *Netra-tarpan* with *Triphala Ghrith*. *Netra-tarpan* was given for subsequent 3 days each week for three months duration. Group B was prescribed carboxymethyl cellulose (lubricating) eye drops for three months duration. Both groups were advised eye exercise, precautions to be taken during near and computer work as well as to use sun goggles for protection from pollution, dust and sunlight. Assessment of treatment was done on the basis of relief from symptoms before and after treatment. *Triphala Ghrith* is rich in vitamin A as well as it contains linoleic acid. Due to these contents it has anti-inflammatory property and also helpful in treating xerosis and dry eyes. After this comparative clinical study it can be concluded that dryness and other complaints in patients of Dry eye / computer vision syndrome who were treated with *Netra-tarpan* with *Triphala Ghrith* from Group A were better treated than Group B.

Keywords: Carboxymethyl Cellulose, Computer Vision Syndrome, Dry Eye, Eye Exercise, *Netra-Tarpan*, *Triphala Ghrith*, Xerosis.

INTRODUCTION

Dry eye / computer vision syndrome occurs due exposure to pollution, dust, sunlight, and meibomian gland dysfunction. It is common in peoples doing outdoor jobs and information technology professionals who are working on computer more than 6 to 8 hours daily. These patients have complaint of burning sensation, itching & foreign body sensation in eyes⁵⁻⁸.

Etiology:

It is a response to prolonged effect of environmental factors such as exposure to sun, dry heat, wind and pollution. These symptoms are common in people doing jobs like salesmanship and working on computer for long time. Lack of blinking during computer work results in dryness of cornea which lead to blurring of vision during continuous near and computer

work. Nutritional deficiency and decreased water intake worst the condition. Other proposed theories include an inflammatory disorder, immune system and tear film abnormalities⁵⁻⁸.

Pathophysiology:

In peoples doing out door jobs and prolonged computer work eyes get dry due to exposure to wind, sunlight, dust and lack of blinking which hampers formation of uniform tear film. This results in dryness of cornea which lead to blurring of vision during continuous work. Long standing conditions results in itching, redness and foreign body sensation in eyes.

Primary prevention:

As UV radiation, exposure to dust, pollution outdoor jobs, regular computer work job for more than 6 to 8 hours daily is believed to play an important role in the pathophysiology,

avoidance of UV exposure is probably important to primary prevention. Regular break for rest, palming, eye movements, habit of natural blinking during continuous and prolonged near work or computer work, ocular surface lubrication may also help.

Need of research topic:

The increased globalization, industrialization has increased job opportunities in marketing, salesmanship and information technology. In these job employees have to travel frequently as well as increased working hours which may be at night time. People doing outdoor jobs and prolonged computer work gets their eyes dry due to exposure to wind, sunlight, dust and decreased blinking during computer work. This results in dryness of cornea which lead to blurring of vision during continuous work. Long standing conditions results in itching, redness and foreign body sensation in eyes. Hence there was a need to give a safe effective line of treatment which will give relief from dry eyes.

AIM & OBJECTIVES:

Aim: To study comparative results of *Netra-tarpan* with *Triphala ghrīt* in patients having Dry eye / Computer vision syndrome.

Objectives:

1. To study the etiology and pathology of Dry eye / Computer vision syndrome.
2. To aware and educate the people to take care to avoid Dry eye / computer vision syndrome.

MATERIALS AND METHODS

Selection of drug:

Trial drug *Triphala ghrīt* was selected for *Netra-tarpan*¹⁻⁴.

Procurement of Drug:

Triphala ghrīt contents are *Aawla (Embelia Officinalis)*, *Hirḍa (Terminalia Chibula)* and *Behadan (Terminalia bellerica)*. Market preparation of *Triphala ghrīt* was preferred.

RESEARCH DESIGN:

Study population:

The study population was selected from patients attending OPD of *Netra Vibhag*, *Shalakyā Tantra* department, *Seth Sakharam Nemchand Jain Ayurved Hospital*, Solapur.

Sampling:

Sampling was done randomly.

Study sample:

Patients having Dry eye / computer vision syndrome were from Solapur city and its periphery.

Sample size:

Total 50 patients having Dry eye / computer vision syndrome, willing to participate in study were selected for each group i.e. experimental as well as control group. These patient were selected from patients attending OPD of *Netra Vibhag*, *Shalakyā Tantra* department, *Seth Sakharam Nemchand Jain Ayurved Hospital*, Solapur.

Study Setting:

The study was carried at *Seth Sakharam Nemchand Jain Ayurved Hospital*, Solapur during Sep 2005 to Dec 2014.

Diagnostic criteria:

The diagnosis is made by slit-lamp examination. Patients were examined thoroughly for sign and symptoms which include

redness, dryness of eyes and any papillae or follicles at palpebral conjunctiva. The diagnosis is most often clear clinically.

Inclusion criteria:

Patients of 20 to 50 years age group, having Dry eye / computer vision syndrome and willing to participate in study were selected.

Exclusion criteria:

- Patients suffering from *pothaki*, *kumbhaki* and other *shothjanya vyadhi* of *vātma* (follicles, papillae, giant papillae, concretions).
- Patients having *vathat vātma*, *kruchonmilan* and *pkshmagat vyadhi* (ptosis, lagophthalmos, entropion and ectropion).
- Patients having *Adhimanth* (glaucoma) *svrana* and *avrana shukla* (corneal ulcer and corneal opacity), corneal degeneration and vascularization.
- Contact lens wearer as well as HIV patients were not included for clinical study.
- Patient not following line of treatment regularity in treatment.

TECHNIQUE OF DATA COLLECTION:

The patient suffering from Dry eye / computer vision syndrome were selected for the study as per inclusive and exclusive criteria. Detail history in particular format was taken with present complaints which include itching, burning, redness, foreign body sensation as well as visual acuity and other ocular examination was done thoroughly. Patients were examined after every week up to three months duration. After three months duration of therapy according to relief from the symptoms the assessment of effect of therapy was done to evaluate results.

TREATMENT & METHODOLOGY SCHEDULE:

Patients having Dry eye / computer vision syndrome were selected for the study. These patients according to their age group were divided randomly in two groups. i. e. Experimental Group (Group A) and Control group (Group B). Care was taken that equal number of patients of each age group should come (i.e. 20 to 30, more than 30 to 40 and more than 40 to 50) in both Group A and B.

Group A was treated with *Netra-tarpan* with *Triphala Ghrīt*. *Netra-tarpan* was given for subsequent 3 days each week for three month duration.

Group B was prescribed carboxymethyl cellulose (lubricating) eye drops for three months duration.

Both groups were advised eye exercise, reading habits care of eyes during computer work or near work for extended period and to use sun goggles for protection from pollution, dust and sunlight.

Precaution for Procedure of Netra-Tarpan:

- *Triphala ghrīt* used for *Netra-tarpan* was sterile to avoid infection and inflammation to eye.
- *Udad Pali* was used for *Netra-tarpan*.
- Flour of *Udad dal* (black lentils) was used for preparation of dough for *pali* around eye. Fresh preparation was used for *Netra-tarpan* each time.
- Proper sterilization precautions were taken using autoclave method to avoid infection and contamination.

Procedure of *Netra-Tarpan*¹⁻⁴:

- *Snehan* with *til tail* and *aardra swed* was given at *mukh* and *manya pradesh* to each patient before *Netra-tarpan*.
- Dough was prepared using flour of *Udad dal*, which was used to prepare *Pali* around eye for *Netra-tarpan*.
- *Triphala Ghrith* was made luke warm in steel container with the help of hot water. Then it was gently poured with spoon in the *Netra pali* from *apang or kaninika sandhi* (lateral canthus or medial canthus). Pouring of *Triphala Ghrith* directly on *karnika* (cornea) was strictly avoided.
- *Triphala ghrith* was poured till eye lash merge in *Ghrith*.
- Patient was asked to blink gently so that *Triphala-ghrit* should reach every part of eye.
- Luke warmness of *Triphala-ghrit* was maintained by removing old and adding fresh luke warm *Triphala-ghrit* time to time as per season.
- The procedure of *Netra-Tarpan* was carried for 10 to 15 minutes.
- After that *Triphala-ghrit* was removed from *netra pali* and *pali* was also removed and patient was asked to wash eyes with luke warm water.
- Patient was advised to use sun-goggle to avoid contact of dust, air and pollution.

Duration of therapy:

- Three months.
- 10 to 15 minutes duration *Netra-tarpan* daily for subsequent 3 days each week for three month duration.

Assessment criteria:

- Patient were examined after every seven days.
- After completion of three months duration the patients were examined relief from symptoms like itching, redness, foreign body sensation of eyes. Comparison of symptoms before and after treatment was done.
- Assessment of therapy was done by status relief in symptoms and signs before and after treatment. Gradation score method was adopted for assessment of symptoms and signs as follows.

Sign and symptoms like itching, redness, and foreign body sensation of eyes.

Table No. 1. Score method for Assessment of sign and symptoms before and after treatment.

Sr.no	Sign & symptoms Grade	Score
1	Absent	0
2	Mild	1
3	Moderate	2
4	Severe	3

OBSERVATION & RESULTS

Table No. 2. Relief in Itching according to score method before and after treatment in Group A & B.

Grade for Itching (score)	Group A (No. of patient)		Group B (No. of patient)	
	Before Treatment	After treatment	Before Treatment	After treatment
Absent (0)	4	33	6	23
Mild (1)	16	10	19	14
Moderate (2)	22	6	18	11
Severe (3)	8	1	7	2

Table No. 3. Statistical analysis of relief in Itching before and after treatment in Group A & B.

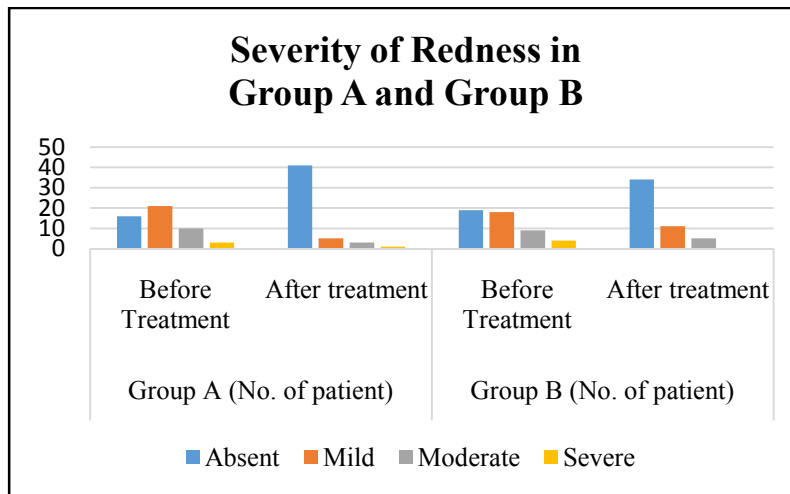
	Score of Itching of eyes Group A		Score of Itching of eyes Group B	
	Before treatment	After Treatment	Before treatment	After Treatment
Mean	1.68	0.50	1.54	0.82
SD	0.84	0.79	0.86	0.92
t test	9.82 p<0.01		7.79 p<0.01	
% relief	70.24		46.75	

Table No. 4. Relief in redness according to score method before and after treatment in Group A & B.

Grade for Redness (Score)	Group A (No. of patient)		Group B (No. of patient)	
	Before Treatment	After treatment	Before Treatment	After treatment
Absent (0)	16	41	19	34
Mild (1)	21	5	18	11
Moderate (2)	10	3	9	5
Severe (3)	3	1	4	0

Table No. 5. Statistical analysis of relief in redness before and after treatment in Group A & B.

	Redness of eyes Group A		Redness of eyes Group B	
	Before treatment	After Treatment	Before treatment	After Treatment
Mean	1.00	0.28	0.96	0.42
SD	0.88	0.67	0.95	0.67
t test	7.26 p<0.01		6.26 p<0.01	
% relief	72		56.25	



Graph No 2. Graphical presentation of relief in redness before and after treatment in Group A & B.

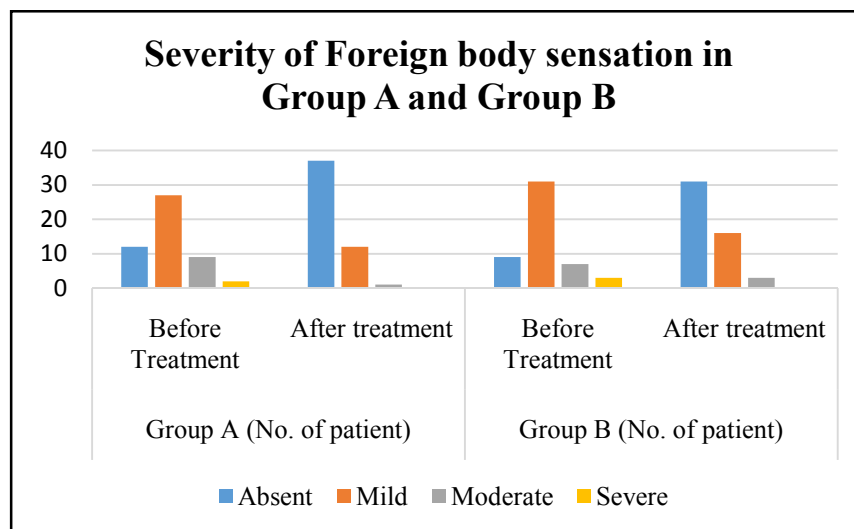
Statistically there is highly significant relief ($p < 0.01$) observed in Redness of eyes after treatment in both groups but Group A shows more % relief than Group B.

Table No. 6. Relief in foreign body sensation according to score method before and after treatment in Group A & B.

Grade for Foreign body sensation (score)	Group A (No. of patient)		Group B (No. of patient)	
	Before Treatment	After treatment	Before Treatment	After treatment
Absent (0)	12	37	9	31
Mild (1)	27	12	31	16
Moderate (2)	9	1	7	3
Severe (3)	2	0	3	0

Table No. 7. Statistical analysis of relief in foreign body sensation before and after treatment in Group A & B.

	Foreign body sensation of eyes Group A		Foreign body sensation of eyes Group B	
	Before treatment	After Treatment	Before treatment	After Treatment
Mean	1.02	0.28	1.08	0.44
SD	0.77	0.50	0.75	0.61
t test	9.92 $p < 0.01$		7.94 $p < 0.01$	
% relief	72.55		59.26	



Graph No 3. Graphical presentation of relief in foreign body sensation before and after treatment in Group A & B.

Statistically there is highly significant relief ($p < 0.01$) observed in Foreign body sensation of eyes after treatment in both groups but Group A shows more % relief than Group B.

After above mentioned therapy for three months duration, patients of Group A shows better relief as compare to Group B. Overall therapy effect is noticeable effective.

DISCUSSION

In Ayurveda many exclusive therapies are described which can be combined with modern for synergetic effect for benefit the patient and give the better quality life. In *Shalaky Tantra* “*Netra-kriyakalpa*” is also a unique and effective therapy for treating and preventing eye diseases.¹⁻⁴ “*Netra-tarpan*” is one of them. Most of the symptoms of Dry eye / computer vision syndrome are due to dryness conjunctiva and cornea, contact of allergens to eye and vitamin A deficiency. *Netra-tarpan* gives smoothening effect to eye. Thus useful in preventing dryness and inflammation which may be induced by allergen contact as well as friction due to dryness. Supplementation of Vitamin A also treats its deficiency induced symptoms and helps to enhance healthy status of eyes.

PROBABLE MODE OF ACTION:

Triphala and *ghrit* both are having *Netrya* property. *Ghrit* contains K2 and lionelic acid. It is having anti-inflammatory and anti-cancer property. *Ghrit* is also rich in vitamin A. Supplementation of Vitamin A reduces and treats dryness which occurs due to its deficiency. In *Netra-tarpan* all these properties nourishes the conjunctival as well as corneal layers and avoid dryness and inflammation of tissue of conjunctiva and cornea. Thus helps to avoid dryness of eyes also gives smoothening to layers of conjunctiva and cornea. Its *Chakshushya guna* improves the health status of eyes.

CONCLUSION

The clinical study reveals that use of *Netra-tarpan* with *Triphala ghrit* in patient of Dry eye / computer vision syndrome helps to cure dryness also improves the health status of eyes

LIMITATION

The study was limited to single geographical area having hot and dry climate. Sample size was small.

Recommendation for future research:

The clinical study was a sincere effort to study the effect of *Netra-tarpan* with *Triphala Ghrit* in treatment of Dry eye / computer vision syndrome. Suggestion related to the study are welcome. As the sample size is small, the study has its own limitations so there is need to study and collect data in bigger sample size.

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