

# A Clinical Study of Ocular Surface Diseases and their Management

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**Abstract:** *A Clinical study of Ocular Surface Disease and their Management. Aims and Objectives: To estimate the prevalence of various ocular surface diseases in patients presenting with symptoms suggestive of ocular surface disease, attending the government general hospital, Guntur.*

**Keywords:** conjunctiva, cornea, tear film.

## 1. Materials and Methods

The study titled “A Clinical study of Ocular surface diseases and their management” was conducted in the outpatient Department of Ophthalmology, Government General hospital, Guntur.

The study was conducted in 110 patients who presented with symptoms suggestive of ocular surface diseases. This was a prospective, cross sectional study, conducted over a period of 1 year 9 months, from Jan 2012 to Sep 2014.

### Inclusion Criteria

Patient presenting with symptoms of ocular surface diseases like

- Burning sensation
- Sandy gritty feeling
- Foreign body sensation
- Photophobia and
- Watering

### Exclusion Criteria

- Cases of trachoma
- Impaired eye lid function as in Bells palsy, nocturnal lagophthalmos,
- Contact lens users,

For all these patients a detailed history was recorded. Ocular examination included visual acuity testing. A complete slit-lamp examination of eyelid margins, lashes, tear meniscus, conjunctiva, cornea and precorneal tear film was done. Relavent examination of other ocular structures was done using 78D/90D, Flurescein staining and Applanation Tonometry.

Following this all are subjected to investigations like tera film break up time, shirmer1 test and rose Bengal staining to diagnose dry eye among the patients in ocular surface diseases.

## 2. Results

**Table 1:** Demographic profile of the study population of Ocular Surface Diseases:

Age group	Males	Females	Total number of cases	Percentage
< 20 yrs	12	13	25	22.7%
21 – 40 yrs	14	18	32	29.2%
41 – 60 yrs	11	15	26	23.6%
>60 yrs	11	16	27	24.5%

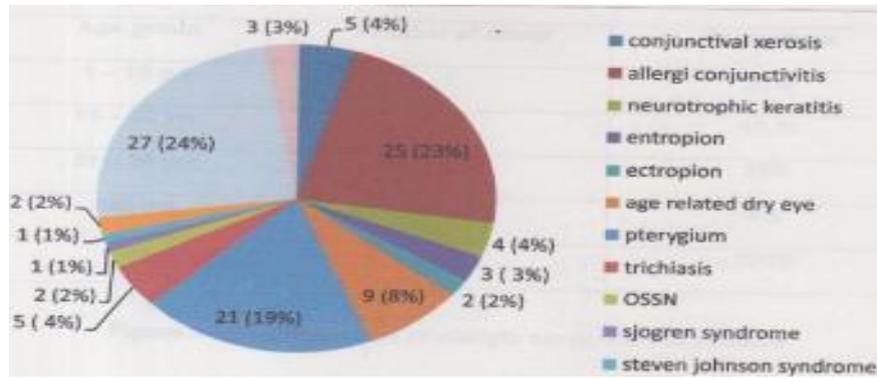


Figure 1: Various Causes of Ocular Diseases.

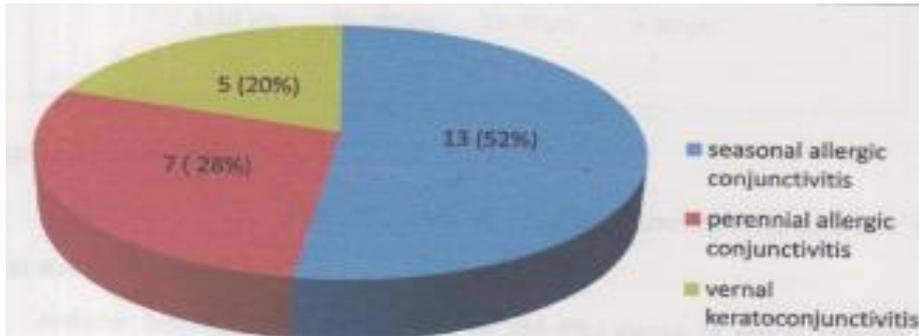


Figure 2: Sub-types of Allergic Conjunctivitis



Figure 3: Showing Age Distribution in Patients with Allergic Conjunctivitis.

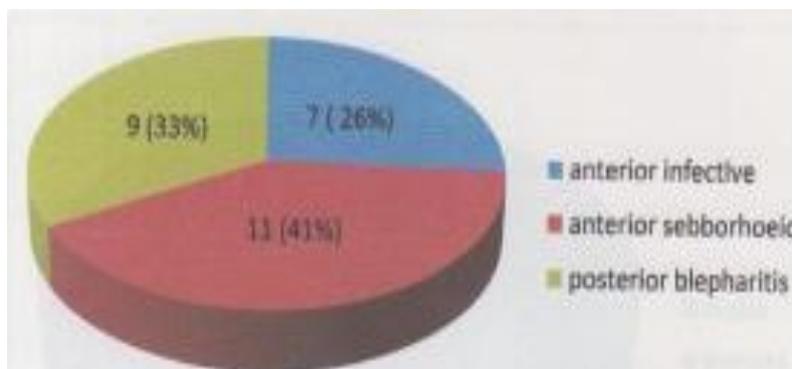
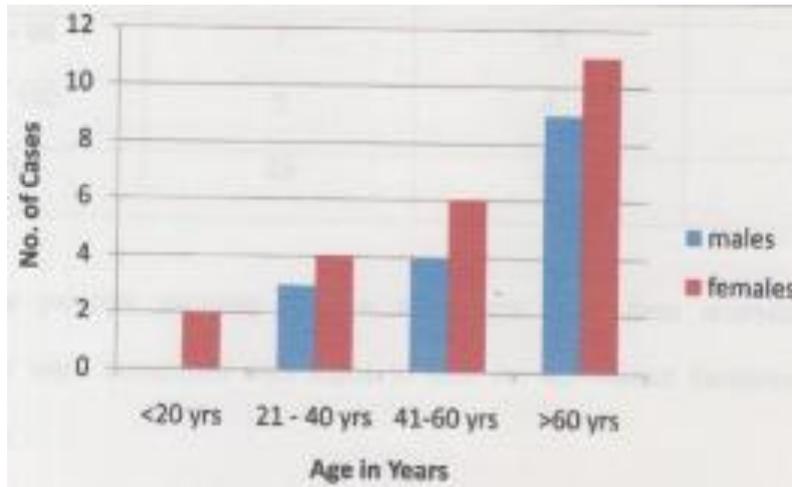


Figure 4: Showing different types of Blepharitis



**Figure 5:** Age and sex distribution in dry eye patients

**Table 2:** Dry eye patients with history of drug abuse

Drugs patient using	Number of patients
Beta blockers	5
Antihistaminics	2
Topical timolol 0.5%	2
Anti diabetic drugs	3

**Table 3:** OSDI Scores and correlation with Dry Eye:

OSDI Scores	Dry eye present	Dry eye absent	Total number of cases
0	0	12	12
1 - 33	27	41	68
34 - 66	7	14	21
67 - 100	5	4	9
Total	39	71	110

**Table 4:** Distribution of patients according to Schirmer test results:

Schirmer test (mm)	0-5 mm	6 - 10 mm	>10 mm	Total
No.of patients	14	27	69	110
percentage of patients	12.7%	24.5%	62.7%	100%

**Table 5:** Results of TBUT

TBUT	Dry eye present	Dry eye absent	Total
Positive	17	0	17
Negative	22	71	93

**Table 6:** Results of Rose Bengal Test:

RoseBengal Test	Dryeye present	Dry eye absent	Total
Positive	33	3	36
Negative	6	68	74

### 3. Discussion

The ocular surface along with the tear film functions to maintain optical clarity to the cornea and provides protection of the surfaces of the eye against microbes, trauma and toxins. An unstable ocular surface can lead to various forms of corneal and conjunctival disfunctions.

Our study deals with patients who had the disorders of lids, conjunctiva, cornea and precorneal tear film involving the entire ocular surface.

Maximum number of patients in our study was in the economically productive age groups affecting the efficiency to work with consequent adverse effect on economy and quality of life.

There were 32(29.2%) cases in the age range 21 to 40 yrs and 26(23.6%) patients in age range 41 to 60 yrs. The youngest patient included in our study (5yrs male child) had conjunctivitis. The oldest patient (80 yrs old female) had trichiasis.

#### **Blepharitis:**

Out of 110 cases of OSD 27 cases were blepharitis, with a prevalence of 37.2%. data from the national disease and therapeutics index reported 590000 patients visits in 1982 due to blepharitis.

In this study all 27 cases of blepharitis were bilaterally affected.

In our study anterior blepharitis formed the majority (66%) of cases and amongst that seborrheic variant (41%) was the major part.

Mean age group of patients with infective blepharitis was found to be 35yrs which is much less than the mean age reported by Lisa M. Nijm (i.e.) 42yrs.(18)

In our study females 16 cases (57%) were affected more than males 11 cases(43%), similar findings were reported by Lisa M. Nijm(18).

In our study mean age of seborrheic blepharitis patients was 47 yrs which is less than what Lisa M. Nijm stated(18) i.e. 51yrs.

Similar to the above study our study too shows that seborrheic blepharitis patients were older than infective blepharitis patients(age range 30 to 60 yrs Vs 3 to 30 yrs respectively).

#### **Trichiasis:**

Trichiasis can injure the conjunctiva and cornea and lead to inflammation, in our study 5 patients had a trichiasis. All 5 had a history of continuous rubbing of eyes. All 5 patients were managed with epilation of misdirected lashes repeated every 4-5 weeks along with tear substitutes.

#### **Entropion:**

A 65 yrs female, 74 yrs female, and 68yrs old male patients of senile entropion with trichiasis were included in the study these are managed with topical lubricants and by surgical correction of entropion.

#### **Ectropion**

In our study a 60yr old patient with grade 4senile ectropion and65yrs old female with grade 2 ectropion were included. They were managed by surgical correction for ectropion along tear substitutes.

#### **Allergic Conjunctivitis**

All patients of conjunctivitis were diagnosed on the basis of history and clinical presentation.

In the present study there were total 25(22.7%) cases of allergic conjunctivitis. Of these 14(56.52%) were males and 11(43.48%) were females.

In 25 allergic conjunctivitis cases 7(28%) cases belonged to age group 1-10 years and 12(48%) cases belonged to age group 11-20years which suggests that majority of allergic conjunctivitis cases are children and young adults.

In allergic conjunctivitis seasonal allergic conjunctivitis was the most common type 13 cases(52%), followed by

perennial allergic conjunctivitis 7 cases(28%) and the vernal catarrh, 5cases(20%).

As there were very few cases of vernal catarrh reported in our study the male to female ratio is not represented.

#### **Stevens- Johnson Syndrome:**

A 21 years female patient and 24yr old male included in our study hadstevens-johnson syndrome after use of paracetamol medication for fever. The patient had ankyloblepharon, symblepharon, fornix shortening and keratinization of conjunctiva.

#### **Secondary sjogren syndrome:**

A 45yr female patient included in our study had secondary sjogren syndrome. The patient had severe signs and symptoms of dry eye. Patient was treated with appropriate systemic medications and ocular lubricants.

#### **Conjunctival xerosis:**

There was 5 cases of conjunctival xerosis in our study belonging to age range from 10ys to 40 yr. these cases were managed with ocular lubricants, vitamin-A supplementation and dietary advice.

#### **Viral keratitis:**

In this study we found 4 cases of viral keratitis affecting ocular surface consisting 2 cases of herpes simplex epithelial keratitis and 2 cases of herpes zoster keratitis.

In a study conducted by R.J.Marsh and Cooper maximum incidence of HZO is in 60-70ys of age. Harding et al. showed peak frequency from 60-69yr.

Oral or topical acyclovir was used in clinically diagnosed Herpes simplex and zoster infections, along with cycloplegicsang tear substitutes.

#### **Pterygium:**

The patients of pterygium in our study belonged to age varying from 21 yrs to 67 yrs. Highest number of cases were noted in 30 - 40yrs age group (33.1%) followed by 40 - 50yrs(38.4%). this shows most cases (55.80%) were above 40 years of age.

In our study females were found to be affected significantly more (57.80%) than males(43.20%) this is different from that mentioned in the studies by Raosrinivas, kijo 1998, fernandes, M., sangwan, v.s., 2005. these studies have explained make preponderance due to outdoor work.

In our study more percentage of females were affected probably due to the fact that females also got exposed to farm and outdoor work in rural area. In present study 74 %(15 cases) pterygium was on the nasal side, 13 %(3 cases) had pterygium on the temporal side and there were 12%(3 cases) with double headed pterygium.

#### **Filamentary Keratitis:**

We had two cases of filamentary keratitis which presented with foreign body sensation and pain. filamentary keratitis was treated by withdrawal of all topical medication, removal of filaments by sterile blunt forceps and lubricating drops.

#### **Dry Eye Disease**

Of all the 110 patients of ocular surface disorders, 39 patients had dry eyes, with a prevalence of 35.4%. The overall prevalence of dry eyes in ophthalmology patients reported in various studies using different questionnaires and diagnostic criteria is different.

In the study conducted by sahai et al.(2005) dry eye was present in 18.4% of the subjects studied. Basak et al.(2012) found 26% prevalence of dry eyes in hospital based population in eastern india. The prevalence of dry eye varies from 10.8% to 57.1% there by showing wide disparity. the vast disparity in dry eye prevalence stems mainly from the different dry eye diagnostic criteria employed and different cut off values for the objective dry eye tests. our study prevalence falls with this range.

#### **Association of Dry Eyes with Age**

The total patients sample was divided into 4 subgroups based on their age. the prevalence of dry eyes was found to increase with increase in age of the patients (range 20-80yrs) and was found to be higher in persons aged more than 40yrs. The mean age of the patients in our study was 51.2yrs. the mean age in khurana et al study was 49.19 years.

#### **Association of Dry Eyes with Sex**

Other reported studies also show more prevalence in females.

#### **Association with Systemic Disease and Medication**

In our study 9 cases of dry eyes had systemic diseases and had a history of use of systemic and/or ocular medication. five cases were on antihypertensive atenolol, two were using antihistaminics, two cases were on anti glaucoma drugs timolol and three were on anti diabetic drugs.

According to them, drugs causing dry mouth can also cause dry eyes and polypharmacy because of complicated drug interaction has a role in precipitating dry eyes.

Beaver dam study mentions many systemic medications like anti depressants, anti androgens that cause dry eyes. Many studies report benzalkoniumchloride(BAK) used as preservative causes dry eye, however other anti-glaucoma drugs having preservatives other than BAK also lead to dry eyes.

In our study 5 patients had diabetes mellitus.

Incidence of 54.3% dry eyes in type 2 diabetes.various other studies to have reported association of dry eyes and tear film dysfunction in diabetic patients.

#### **OSDI scores:**

It has been proposed time and again that there is poor correlation between subjective symptoms and objective signs of dry eye,thus emphasizing the need for objective testing in all patients at risk for developing dry eye.OSDI scoring system was used in our study as it can classify the dry eye into mild,moderate and severe varieties in table 6.

In our study on OSDI scoring of 67 – 100 which corresponds to severe dry eye was found to correlate significantly with objective tests of dry eye.

Srinivasan et al (79) used OSDI scoring to detect the dry eye in post menopausal women and concluded that OSDI could be effectively used to separate post menopausal women who demonstrates clinical signs of ocular dryness.

#### **Tests performed for detection of dry eye:**

Three diagnostic tests were performed in all patients. Positivity in two out of three tests was necessary to label the patient as having dry eye. Among all the tests schirmers test showed a high sensitivity ,specificity and positive predictive values. Apart from being one of the most frequent tests used in dry eye clinical practice,other studies have also shown it to have a sensitive and specificity of upto 85% which corresponds to the results of our study.

In European community group on diagnostic criteria for sjogren syndrome, sensitivity and specificity of tests for ocular involvement in sjogren syndrome,showed a sensitivity and specificity of 76.9% and 72.4% respectively.

Rose Bengal test was the next best test in terms of sensitivity (84.6%) and specificity (95.7%). Table 10 other studies showed a specificity of 81.7% for Rose Bengal staining.

The characteristic staining of the inter palpebral area in wing shaped manner (82) was noted in most of the cases who tested positive. On comparing the results of schirmer test and Rose Bengal test,it was found that,30 patients showed positive results for both tests.6 patients were positive with Rose Bengal test,but negative with Schirmer test.11 patients were positive with Schirmer test,but negative with Rose Bengal test.

TBUT was found to be positive in 17 cases. TBUT was found to have a sensitivity of 43.5% and specificity of 100%.

#### **Management**

In addition to the treatment with tear substitutes,specific management strategies were employed according to the underlying pathology. Hot fomentation was advised in meibomian gland dysfunction. Non responsive cases are treated with oral doxycycline 100mg per day atleast 2 weeks.

Squamous blepharitis was treated by cleaning the lid margins with diluted baby shampoo. Azithromycin eye ointment was prescribed in ulcerative blepharitis. In trichiasis cases epilation was done. Surgical correction was done for cases of ectropion and entropion. Allergic conjunctivitis was managed with topical antihistaminics,topical steroids,olopatadine eye drops were used in vernal catarrh. Oral and topical acyclovir was used in herpes simplex and zoster infections. Vitamin A deficiency was managed by proper supplementation,dietary advice , medication and ocular lubrication.

Cases of stevens Johnson syndrome were managed with concerned medical and surgical faculties. Fornix maintenance, avoidance of corneal exposure, treatment of infection and lubrication was advised.

Pterygia that were progressive and are causing discomfort were treated by excision and conjunctivo- limbal autografts.

Modification of environmental factors like proper height of computer screens, taking frequent breaks by working on a computer, humidifiers were suggested. Ocular lubricants and supportive treatment was advised depending upon the severity. Patients were asked to come for follow up as and when needed in our study during follow up schirmer test and TBUT were performed. Schirmer test didn't show significant improvement ,whereas TBUT showed improvement during follow up.

#### **4. Conclusion**

110 cases of ocular surface disorders were studied.

Relevant history was extracted which included OSDI questionnaire and all patients were examined with the help of slit lamp, tear film break up time, Schirmer test, fluorescein staining and Rose Bengal staining. Disorders affecting the lids,lacrimal glands,conjunctiva and cornea were found to affect the ocular surface.

Lid disorders detected were blepharitis in 27 patients, trichiasis in 5 patients and entropion 3 cases and ectropion 2 cases. Seborrhic blepharitis tends to occur in old age compared to infective blepharitis with a mean age of 47 years and 35 years respectively.

Allergic conjunctivitis in 25 patients, conjunctival xerosis in 5 patients, 2 cases of steven Johnson syndrome and 1 case of sjogren syndrome were the diseases of conjunctiva affecting the ocular surface in our study. Allergic conjunctivitis is more common in age group of 10-20 years, Seasonal allergic conjunctivitis 13 cases (52.1%) was more common among allergic conjunctivitis. In pterygium females (57.80%) more affected than males (43.20%),all are in working age group. Nasal pterygium (71%) is more common than temporal (19%) and 10% cases were doubled.

Of 110 cases of ocular surface diseases 39 cases were positive fo dry eye with a prevalence of 35.4%. The prevalence rate was found to be increased with increasing age of patients and was higher in patients of age 65 years. Dry eyes more in females i.e.,(59.4%) than males i.e., 16 cases (40.6%).3 dry eye patients were computer professionals. Out of 39 cases of dry eye,9 had systemic diseases and 5 were on beta blockers,2 were on antihistaminics,2 were on timolol,3 were on anti diabetic drugs.

OSDI was found to be reliable measure of dry eye symptoms. Higher scores of OSDI, indicating severe dry eye, correlated well the diagnostic tests for dry eye.Schirmer test showed a higher sensitivity and specificity, followed by Rose Bengal Staining.TBUT was significantly decreased in cases with Meibomian gland dysfunction.

In conclusion Ocular surface is important for the structural and functional efficiency of the eye. Wide range of diseases presenting in Ophthalmology affect the ocular surface which lead to patient discomfort. In addition to the treatment with tear substitutes specific management strategies were employed according to the underlying pathology. Ocular surface dysfunction is final common pathway that occurs as a result of an imbalance of Ocular surface protective mechanism. Timely detection and management of Ocular Surface Diseases elevates patients suffering and in some cases prevents blindness.

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