



EVALUATION OF TEAR FILM ABNORMALITIES IN SURFER'S EYE (PTERYGIUM) – A PILOT STUDY.

Ophthalmology

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ABSTRACT

AIM: Purpose of this study is to evaluate tear film abnormalities in patients with pterygium. **MATERIALS AND METHODS:** A prospective descriptive clinical study was conducted on 40 eyes with pterygium. All age groups and both sexes are included. All patients are evaluated for dry eye. Dry eye was evaluated by using tear film break up time (TBUT) and schirmer's test-1.

RESULTS: The incidence of pterygium is more common in males than in females. Diminution of vision is the most common symptom followed by redness, foreign body sensation, itching and cosmeses. Tear film abnormality was found in the eyes of patients with Pterygium. TBUT value <10 secs seen in 70% patients. Schirmer's test-1 value <5mm seen in 10% patients, 5-10mm in 30% and 11-15 mm in 25% patients.

CONCLUSION: This study shows that there is a strong correlation between dry eye and Pterygium. Pterygium occurred in people who exposed to sunlight, dust and heat. Patients with pterygium eyes have unstable tear film than normal eyes. This suggests that there is a strong relationship between dry eye and Pterygium.

KEYWORDS

Surfer's eye (Pterygium), Schirmer's test-1, Tear film break up time (TBUT)

INTRODUCTION:

Pterygium, which is characterized by the proliferation of subconjunctival tissue as vascularized granulation tissue. It destroys the superficial layer of stroma and Bowman's membrane as it invades the cornea. 90% of the pterygia are located nasally but can be located temporally also. It affects the visual acuity as it invades the pupillary area. One of the theories is that tear film abnormalities cause local drying of the cornea and conjunctiva, which in turn predisposes to Pterygium.¹

Dry eye is a disorder of the tear film due to tear deficiency or excessive tear evaporation.² It causes damage to the interpalpebral ocular surface. Patients with dry eye have symptoms of irritation, foreign body sensation, itching and non-specific ocular discomfort. Risk factors of dry eye are increasing age, male sex, occupation, exposure to heat, smoking and Pterygium.³

There are two main categories of dry eye states, an aqueous tear deficiency state and an evaporative state. Dry eye disease can decrease the performance of activities of daily living and is associated with an overall decrease in quality of life. Dry eye can range from mild to severe. Patients with low blink rate such as prolonged use of computers and prolonged exposure to heat may cause increased evaporation of tear film. Lacrimal gland and duct abnormalities may cause aqueous deficiency dry eye.²

Several clinical tests are available to measure various aspects of the integrity of the tear film and ocular surface such as Schirmer test and tear film breakup time. Patients with decreased tear production are more prone to the damaging effects of UV rays in the sun.

After fluorescein staining, TBUT was performed. It was performed by put a drop of fluorescein stain in the lower fornix and asked the patient to blink. The patient is examined under cobalt blue light of the slit lamp.

In TBUT time interval between the opening of the eyelids and appearance of the first dry spots on the tear film was recorded three times using a stopwatch and the mean value was taken. Normal TBUT value is >10 seconds.

Schirmer's test:

1. Without anaesthesia (Schirmer's test-1)
2. With anaesthesia (basal secretion/SCH-2)

Whatman no.41 filter paper strips measuring 35x5 mm known as Schirmer's tear test filter strips and is folded 5mm from one end

Grading of schirmer's test:

NORMAL	>15MM
MILD	11-15MM
MODERATE	5-10MM
SEVERE	<5MM

AIM:

Aim of our study is to study the evaluation of tear film abnormalities in Pterygium.

MATERIALS AND METHODS:

Study type: Prospective descriptive clinical study.

Sample size: 40

Duration of study: March 2019 to August 2019

Place of study: Department of ophthalmology, ASRAM Medical College and Hospital.

INCLUSION CRITERIA:

1. Patients presenting with Pterygium to Ophthalmology OPD.
2. All age groups and both sexes are considered as criteria.
3. Patient willing to give written consent.

EXCLUSION CRITERIA:

1. Patients with systemic diseases/syndromes associated with dry eye
2. Patients on systemic medication
3. contact lens users
4. Patients having an adnexal disease,
5. Anterior or posterior segment disease which alters tear secretion and stability,
6. Patients having recent ocular surgery(cataract surgery)
7. Patients on any topical medication,
8. Patients for not willing to give consent

Tear film break up time (TBUT):

TBUT test was performed before other dry eye tests and recorded after fluorescein staining. The test is positive when the time taken was less than <10 sec.

Schirmer "s test :

Schirmer "s tear test filter strips. At the end of 5mins, the test is positive if the length of wetting less than 10mm.

Documentation of the variables included: Age, gender, history, uncorrected visual acuity, best-corrected visual acuity using Snellen' chart, Slit-lamp biomicroscopy, Automated refraction and subjective refraction, TBUT, and Schirmer's

RESULTS:

The study included 40 eyes (21 male, 19 female patients) with a mean age of 52.275 who attended ophthalmology OPD, ASRAM hospital, over six months.

In the present study, the most frequently occurring symptom in pterygium eyes is diminished of vision 32, redness 13, followed by foreign body sensation 12 and cosmeses 2.

Table 1: Age And Nunber Eyes With Pterygium

AGE (YEARS)	NUMBER OF EYES WITH PTERYGIUM
25-50YRS	14(35%)
51-75YRS	25(62.5%)
>75	1(2.5%)

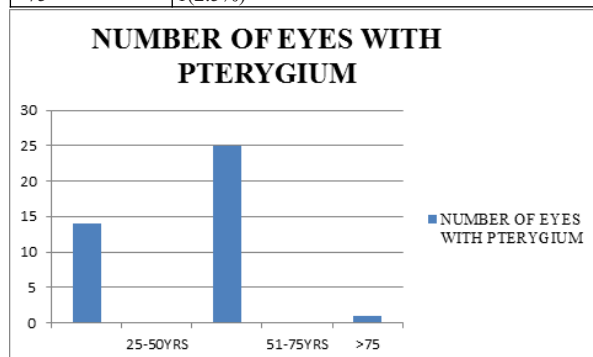
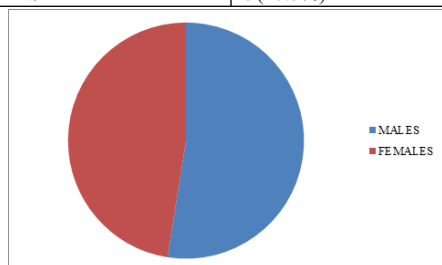


Table 2 : Male : Female Ratio

MALES	21(52.5%)
FEMALES	19(47.5%)



SYMPTOMS	NO.OF CASES
DIMINION OF VISION	32
REDNESS	13
FOREIGN BODY SENSATION	12
ITCHING	7
COSMOSIS	2

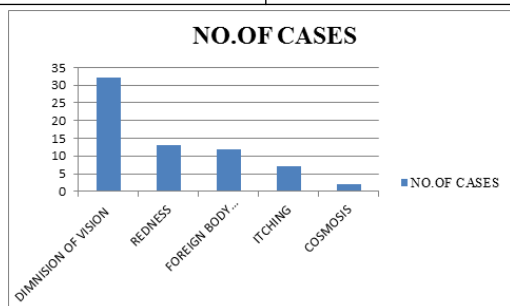


Table 3 : Risk Factors Associated With Pterygium

RISK FACTORS	NUMBER OF CASES
EXPOSURE TO UV RAYS	36
EXPOSURE TO HEAT AND DUST	36
ASSOCIATION WITH SYSTEMIC DISEASES	16
EXPOSURE TO PESTICIDES	12

Table 4: Results OfTBUT

TBUT	<10SEC	>10 SEC
NO.OF CASES	28 (70%)	12(30%)

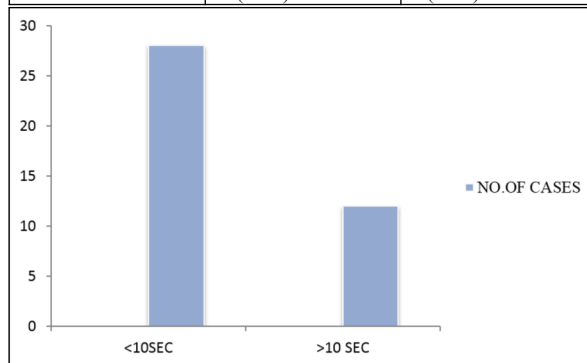
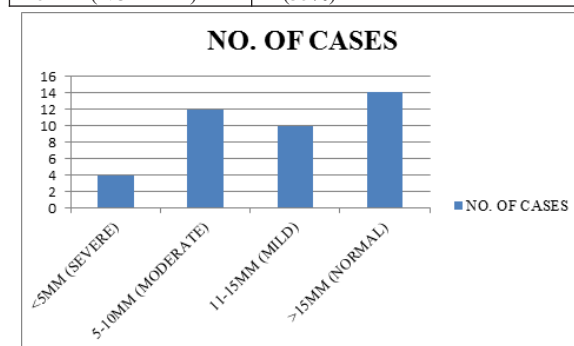


Table 5: Results OfSchirmer's Test

SCH-I(IN MM)	NO. OF CASES
<5MM (SEVERE)	4 (10%)
5-10MM (MODERATE)	12(30%)
11-15MM (MILD)	10 (25%)
>15MM (NORMAL)	14 (35%)



DISCUSSION:

Pterygium, a degenerative and hyperplastic condition of the conjunctiva, occurs due to exposure to environmental factors like sunlight, heat and dust.³ Tear film helps in maintaining the moist surface on the anterior portion of the globe. The tear film act as a defence mechanism against environmental factors. Tear film abnormalities found in the eyes of patients with Pterygium. Some authors suggest that tear film abnormalities lead to the development of Pterygium.

In our study, the maximum number of pterygium cases between the age group of 50-70 years of life, similar to other studies. Patients presented with various symptoms related to tear film abnormality and few with other symptoms.

In our present study, most of the patients with the complaint of diminished vision, followed by redness, foreign body sensation and then itching and cosmesis. Few patients presented with 2 or more claims. Roka N et al. showed that redness was the most common symptom followed by grittiness and burning sensation in his study.²

Pterygium is more common in people exposed to sunlight, heat and dust in our study. Males are more affected than females, which is similar to Lee et al. 2002, Fotouhi et al. 2008.

There are so many tests for diagnosis of dry eye, but in our study, we use tear film break up time (TBUT) and Schirmer's test-I. The mean TBUT value was 7.75 sec in pterygium eyes in this study it is lower than the normal TBUT value. The tear film is composed of the lipid layer, aqueous layer and mucoid layer. Abnormal TBUT values are found in eyes with Pterygium suggest that there is an abnormality of the mucin layer, which may lead to the formation of Pterygium.

A study conducted by Moreno JC et al. showed that TBUT values are significantly decreased in eyes with Pterygium.⁷ Another study conducted by Wang S et al. compared the TBUT values of pterygium eyes with normal healthy eyes showed that significantly different [P<0.05].

A study conducted by Rajab AY showed that the mean TBUT was 11.4±6sec in pterygium eyes and 15±4.5 sec in the control group. Mean TBUT of two groups show a significant difference.⁵

The mean Schirmer's test –I value 13.85mm in our study. A study conducted by Rajiv et al. found that the mean SCH-I was 12.6mm in healthy eyes and 5.2mm in pterygium eyes. It showed that SCH-I was markedly decreased in pterygium eyes.⁶

Moreno JC et al. found that eyes with Pterygium have a significant reduction in Schirmer's test-I value.⁷ A study by El-sersy TH found that in healthy eyes, the mean SCH-I value was 13.76±2.06mm and 5.85±1.86mm in pterygium eyes. The study shows a statistically significant difference between the cases and controls.⁸

In this study, dry eye was diagnosed when SCH-I was <15mm, and TBUT was <10 sec. This study shows a strong clinical correlation between dry eye and Pterygium.

CONCLUSION:

From this study, males are more affected than females. The maximum number of Pterygium found in the sixth to seventh decade of life. This study also shows there is a strong correlation between dry eye and occupation. Pterygium occurred in people who exposed to sunlight, dust and heat. Diminishing of vision is the most common symptom followed by redness, foreign body sensation, itching and cosmeses.

Patients with pterygium eyes have unstable tear film than normal eyes. This suggests that there is a strong relationship between dry eye and Pterygium. Therefore, pterygium management includes treatment of dry eye also. Patients should also take appropriate precautions like UV protection glasses, tear film substitutes, hats and umbrellas to protect their eyes from avoiding exposure to sunlight, wind, heat and open flames.

REFERENCES :

1. Lu P, Chen XM. Prevalence and risk factors of Pterygium. *Int J Ophthalmol.* 2009;2(1):82-5.
2. Roka N, Shrestha SP. Assessment of tear secretion and tear film instability in cases with Pterygium and normal subjects. *Nepal J Ophthalmol.* 2013;5(9):16-23.
3. Lee AJ, Lee J, Saw SM, Gazzard G, Koh D, Widjaja D, et al. Prevalence and risk factors associated with dry eye symptoms: a population based study in Indonesia. *Br J Ophthalmol.* 2002;86:1347-51.
4. Ganeshpuri AS, Kamble BS, Patil P, Wadgaonkar SP. A comparative study of tear film stability and secretion in pterygium patients - Diabetic vs non-diabetic. *Int J of Health Sci Res.* 2014;4(4):86-97.
5. Rajab AY. Evaluation of tear film stability in Pterygium and pingueculae. *Ann Coll Med, Mosul.* 2013;39(2):132-5.
6. Rajiv, Mithal S, Sood AK. Pterygium and dry eye-A clinical correlation. *Indian J Ophthalmol.* 1991;39(1):15-6.
7. Moreno JC, Garcia VG, Garcia L. Evaluation of tear film in patients with Pterygium. *Eur J Ophthalmol.* 2011;00(00).
8. El-Sersy TH. Role of Pterygium in ocular dryness. *J Egypt Ophthalmol Soc.* 2014;107(4):205-08.
9. Ishioka M, Shimmura S, Yagi Y, Tsubota K. Pterygium and dry eye. *Ophthalmologica.* 2001;215(3):209-11.
10. Basic tear secretion measurement in Pterygium. Chaidaroon W, Pongmoragot N. *J Med Assoc Thailand* 2003;86(4):348-52.
11. Oh HJ, Park YG, Yoon KC. Changes of the ocular surface and tear film in patients with pinguecula and Pterygium. *J Korean Ophthalmol Soc.* 2006;47(5):717-24.
12. Lu P, Chen X, Kang Y, Ke L, Wei X, Zhang W. Pterygium in Tibetans: a population-based study in China. *Clin Experiment Ophthalmol.* 2007;35(9):828-3.
13. Goldberg L, David R. Pterygium and its relationship to the dry eye in the Bantu. *Br J Ophthalmol.* 1976;60:720-1.
14. Li M, Zhang M, Lin Y, Xiao Q, Zhu X, Song S, et al. Tear function and goblet cell density after pterygium excision. *Eye.* 2007;21:224-8.
15. Lu J, Wang Z, Lu P, Chen X, Zhang W, Shi K, et al. Pterygium in an aged Mongolian population: a population-based study in China. *Eye.* 2009;23:421-27.
16. Anguria P, Ntuli S, Carmichael T. Relationships of heredity and dry eye with pterygia in black African patients. *SAMJ.* 2011;101(2):110.