



ORIGINAL RESEARCH PAPER

Ophthalmology

TEAR BREAK UP TIME IN PTERYGIUM

KEY WORDS: Pterygium, TBUT, Dry eyes

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ABSTRACT

Context: Tear film abnormalities have been incriminated in the symptomatology of Pterygium like dry eyes, burning sensation and foreign body sensation.

Aims: To evaluate tear film break up time in patients with unilateral pterygium.

Settings and Design: Cross-sectional, case-control study.

Methods and Material: Cross-sectional study of both eyes of 100 patients with unilateral pterygium was conducted between March 2018 to April 2019. Patients were subject to fluorescein tear film break-up time (TBUT) analysis. The normal eye acted as control and the results were subjected to statistical analysis.

Results: The study comprised of seventy males and thirty females in the age-range 28-76 years. The mean TBUT was 7.8 ± 1.2 s and 12.4 ± 1.8 s in the eyes with pterygium and the normal eyes respectively.

Conclusions: The mean TBUT was found to be significantly decreased ($p < 0.01$) in eyes with pterygium compared to control eyes. This study thus emphasizes that tear film abnormalities play a role in the symptomatology of pterygium and hence early institution of therapy for tear film stabilization can help prevent the morbidity related to disease.

INTRODUCTION:

Pterygium is defined as a triangular, fibro-vascular sub-epithelial in-growth of elastotic degenerative conjunctival tissue encroaching onto the cornea. Tear film abnormalities have been incriminated in the causation of symptoms like dry eyes, foreign body sensation, burning sensation, astigmatism, ocular irritation and itching associated with pterygium.^[1-7]

Andaman and Nicobar Islands are situated in the tropical zone with exposure to both direct and reflected ultraviolet radiations, making Pterygium a prevalent disease in the inhabitants. This provides ideal conditions for studying tear film abnormalities in cases of pterygium, prompting this study.^[8]

Patients and Methods:

Patients for this study were selected from among those attending the routine ophthalmology OPD.

Time Frame: March 2018 to April 2019

Study Design: Cross-sectional, case - control, double - blinded study

Ethical approval: The study adheres with the tenets of the Declaration of Helsinki. The patients were enrolled only after getting proper informed consent and in cases of advanced pterygium hampering vision or causing discomfort, surgical treatment was rendered after proper approval.

Selection of Cases:

One hundred (100) cases of unilateral pterygium were studied with the other eye acting as control.

Every selected patient was examined, investigated and statistical data analysis was done with p -value < 0.05 considered as significant.

Inclusion Criteria:

Patients of either sex, in the age range of 20-80 years with unilateral pterygium of any grade with extension onto the cornea, and consenting to participate and undergo tests were included in the study.

Exclusion Criteria:

Patients with bilateral Pterygium, recurrent Pterygium and pseudo-ptyerygium were excluded from the study.

Also, patients with any active inflammation in either eye or

adnexa at presentation or lacrimal system disorders at presentation were excluded from the study.

Patients with history of ocular surgery, trauma or pre-diagnosed cases of dry eye and patients on topical medications were also excluded from the study.

Methodology of the test for evaluating tear film instability:

Tear break-up time (TBUT):

Fluorescein impregnated strip was used for staining the tear film by touching the inferior fornix and making the patient blink several times. The cornea was scanned under low magnification of the slit-lamp bio-microscope using the cobalt-blue filtered light. Time of appearance of first black spot on the cornea within the blue-green field from last blink measured the tear film BUT. Values less than 10 seconds were considered abnormal.^[11]

Results:

This study was conducted on 100 (70males/30 females) cases of unilateral pterygium attending the Ophthalmology outpatient department.

Age-sex distribution:

Average age of the study group was 45.15 years with age range of 20-80 years. [Table-1]

Maximum cases were seen in the 40-50 year age group in both sexes (40%).

Pterygium was more prevalent in males than females in this study (male / female = 2.3).

Tear break-up time test results:

The mean TBUT value in the normal control eyes was 13.2 ± 1.2 s. The mean value in eyes with pterygium was 8.8 ± 1.1 s.

It was normal in 65 % and abnormal in 35 % of eyes with pterygium and 90 % and 10 % of control eyes respectively. This was significantly low in eyes with pterygium (p value = 0.001; chi squared = 8.69). [Table-2]

DISCUSSION:

In this cross-sectional study conducted at our department between March 2018 and April 2019, relation between tear film abnormalities and its association with pterygium symptomatology was studied.

Earlier studies conducted by Cameron (1965) and Youngson (1970) indicated that pterygium was more common beyond fourth decade of life. Rao et al (1988) came to the same conclusion in the Indian context, deducing that around 60 % cases were seen in people aged 40 years or more.^[9-11]

Our study corroborated the findings of erstwhile studies, finding the maximum prevalence of pterygium to be in the fourth decade (40%). Inclusion of only unilateral cases of Pterygium in this study explains the lower prevalence as compared to the afore-mentioned studies which considered both unilateral and bilateral pterygia.

A unanimous conclusion from all the studies has been that pterygium is seen more commonly in males than females.^[12]

In our study also, 70 males and 30 females had pterygium giving a male / female ratio of approximately 2.3.

TBUT values in eyes with pterygium were found consistently abnormal in studies by Gazzard et al, Rahman et al, Goldberg et al, Pandey et al and Chaidaroon et al.^[13-15]

In our study, TBUT values were found to be significantly reduced (p=0.001) in eyes with Pterygium (35/100 eyes) as compared to the control eyes (10/100 eyes).

Selecting the normal eye as control for the unilateral pterygium obviated the population related epidemiological bias like age, sex, occupation and environmental factors thus ensuring that the control eyes were perfectly matched. Weakness of this study lies in the fact that the control eyes were not followed up for development of tear film abnormalities and subsequent Pterygium. A further study envisaging comprehensive dry eye evaluation including conjunctival impression cytology would be advocated.

CONCLUSION:

Our study, on the basis of abnormal TBUT scores in eyes with Pterygium, concludes that tear film instability could be the major factor accounting for the ocular morbidity associated with Pterygium. Since tear film instability is a major cause leading to Pterygium symptomatology, we suggest avoiding direct exposure to ultraviolet sunlight and reflected radiations, using ultraviolet protecting spectacles, avoiding exposure to arid conditions and polluted, smoky environments, blink frequently and prohibit smoking as the remedial and preventive measures to the population:

Table-1: Age-sex distribution of the study population

Age range (years)	Males (n=70) Number	Females (n=30) Number	Total (n=100) Number
20-30	07	02	09
30-40	18	04	22
40-50	26	14	40
50-60	12	08	20
60-70	04	01	05
70+	03	01	04

Table-2: Tear break-up time test results in the study population

T-BUT test value (seconds)	Eyes with pterygium (n=100)		Control eyes (n=100)	
	Number	Percentage	Number	Percentage
Normal (> 10 s)	65	65	90	90
Abnormal (<10s)	35	35	10	10

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