

Dry eye syndrome in patients with Pterygium in Lomé

Mawuli AK Santos^{1*}, Nidain Maneh¹, Yannick Ayikoue¹, Kokou Vonor², Kossi Dzidzinyo¹ and Koffi D Ayena¹

¹Department of Ophthalmology, Faculty of Health Sciences, University of Lomé, Togo

²Department of Ophthalmology, Faculty of Health Sciences, University of Kara, Togo

Abstract

Purpose: To assess symptoms related to dry eye and measure the quantity and quality of lacrimal secretion in patients with pterygium.

Methods: This was a prospective study that took place at the Campus University Hospital of Lomé, from January to October 2021. It concerned all eyes of patients with pterygium, regardless of stage, type and laterality, in whom we looked for ocular dry syndrome using the Ocular Surface Disease Index questionnaire. We performed the Schirmer test, a slit-lamp examination without and with fluorescein staining, and the Break Up Time. The variables studied were age, sex, pterygium characteristics, symptoms of dry eye syndrome, Ocular Surface Disease Index score, the Schirmer test and Break Up Time.

Results: We recruited 140 eyes from 90 patients, including 50 cases of bilateral pterygium and 40 cases of unilateral pterygium. The mean age was 47.35±12.20 years, with a sex ratio (M/F) of 0.55. Pain, pruritus and lacrimation were the most common complaints. Pterygium was classified as stage I in 57.86% of cases, stage II in 33.57% and stage III in 8.57%. The pterygium was nasal in 87.14% of cases. The mean Ocular Surface Disease Index score was 32.55, with extremes of 0 and 103. It was normal in 23.33% of cases, compared with 76.67% with dry syndrome, with a statistically significant correlation ($p<0.05$) between gender and the existence of ocular dry syndrome. The Schirmer test was normal in 47.15% of cases versus 52.85% of eyes with lacrimal hyposecretion. Break Up Time was normal in 24.29% of cases, compared with 75.71% of eyes with lacrimal instability.

Conclusion: Subjects with pterygium are most often subjects with dry eye syndrome, tear film instability. Lacrimal hyposecretion is found to a lesser extent.

Introduction

Pterygium is a relatively widespread benign conjunctival fibrovascular neof ormation of triangular shape progressively encroaching on the cornea. The prevalence of pterygium varies widely from region to region, ranging from 1.2% to 19.6% [1]. The pathophysiology of pterygium remains poorly understood. Several extrinsic and intrinsic factors contribute to its development. Extrinsic factors include solar radiation, wind, heat, repeated microtrauma and microbial and viral infections. Intrinsic factors include hereditary predisposition, hyposecretion and qualitative alterations in lacrimal secretion [2]. Dry eye is a multifactorial disease of the tears and ocular surface, leading to symptoms of discomfort, visual discomfort and lacrimal instability, with a risk of ocular surface damage. The aim of our study is to assess the symptoms associated with dry eye and to measure the quantity and quality of lacrimal secretion in patients with pterygium.

Patients and methods

This was a cross-sectional study that took place at the Campus University Hospital of Lomé, from January to October 2021, a period of 10 months. It concerned all eyes of patients with pterygium, regardless of stage, type or laterality, and who had never undergone surgery for their pterygium.

We systematically recruited patients who were seen in consultation and met the inclusion criteria during the study period. Patients were systematically interviewed at the end of the consultation, after obtaining informed consent.

The Ocular Surface Disease Index (OSDI) questionnaire was used to collect symptoms related to ocular discomfort induced by dry

eye, in order to establish a classification of dry eye syndrome [3]. It consists of a 12-item questionnaire with a score from 0 to 4, enabling dry eye syndrome to be assessed and classified according to severity. These 12 items are grouped into 3 categories: symptoms experienced (eye sensitivity to light, sensation of sand, eye pain, visual blur, visual impairment), limitation of activities of daily living (reading, driving at night, using a computer, watching television) and environmental situations causing eye discomfort (in windy, dry or air-conditioned places). Each answer is rated from 0 to 4 points: all the time (4), most of the time (3) half the time (2) sometimes (1) never (0). The final score is calculated by multiplying the sum of all the scores by 25 and then dividing the total by the number of questions answered. Scores range from 0 to 100 with 0 to 12 representing normal, 13 to 22 mild dryness, 23 to 32 moderate dryness, and 33 to 100 severe dryness.

We performed the Schirmer test, a slit-lamp examination without and with fluorescein staining, and the Break Up Time (BUT). The Schirmer test was normal when its value was greater than 15 mm, lacrimal hyposecretion if the value was between 5 and 15 mm and severe lacrimal hyposecretion if the value was less than 5 mm. BUT was normal when its value was greater than 15 seconds. Between 10 and 15 seconds, it is a moderate instability of the tear film. Less than 10 seconds, it is a severe instability.

***Correspondence to:** Dr. SANTOS Mawuli A. Komi, Department of Ophthalmology, Faculty of Health Sciences, University of Lomé, TOGO. BP: 30256 Lomé, TOGO, Tel: +22890118154; Email: santosmawuli@yahoo.fr

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Slit-lamp measurement of the pterygia has made it possible to classify them according to the Cornard classification: stage I for pterygium encroaches on the cornea by 1 to 2 mm, stage II for corneal invasion between 2 and 4 mm, stage III for corneal invasion greater than 4 mm [4].

The variables studied were age, sex, pterygium characteristics (site, laterality and growth stage), symptoms of dry eye syndrome, OSDI score, Schirmer test and BUT.

Data analysis was performed using R Studio software version 3.4.3. and a p value < 0.05 was significant.

Results

We recruited 140 eyes from 90 patients out of a total of 4787 patients consulted during the study period, representing a hospital frequency of 1.9%. The study reported 50 cases of bilateral pterygium and 40 cases of unilateral pterygium. The mean age was 47.35 ± 12.20 years [24-73 years]. There were 32 males and 58 females with a sex ratio (M/F) of 0.55. Pain, pruritus and tearing were the most frequent complaints in 16.67%, 15.56% and 13.33% of cases respectively. Pterygium was classified as stage I in 57.86% of cases, stage II in 33.57% and stage III in 8.57%. Pterygium was nasal in 122 eyes (87.14%), bipolar in 17 eyes (12.15%) and temporal in one eye (0.71%).

The mean OSDI score was 32.55 [0 – 93.8]. It was normal in 23.33% of cases, compared with 76.67% with dry syndrome. Dry syndrome was mild in 14 patients (15.56%), moderate in 38 (42.22%) and severe in 17 (42.22%) (Figure 1). There was a statistically significant correlation ($p = 0.009$) between gender and the existence of dry eye syndrome. Female sex was found in 94.12% of cases of severe dry eye syndrome and in 65.79% of cases of moderate dry eye syndrome (Table 1). There was no statistically significant correlation between the existence of dry eye syndrome and pterygium stage, the Schirmer test, BUT.

The mean Schirmer test was 16.21 mm [1 - 35mm]. The Schirmer test was normal in 47.15% of cases, compared with 52.85% of eyes with lacrimal hyposecretion (Table 2). The mean BUT was 11.53 seconds [4 - 28 seconds]. The BUT was normal in 24.29% of cases versus 75.71% of eyes with lacrimal instability (Table 3).

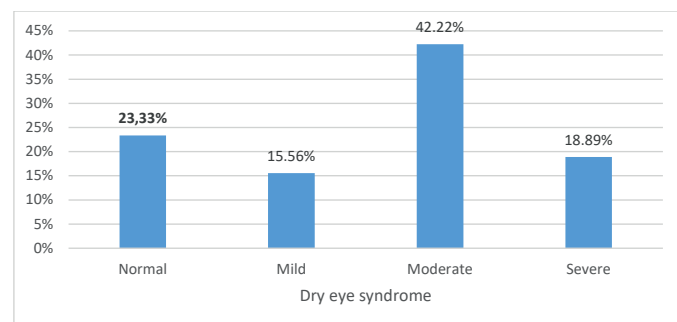


Figure 1. Distribution of patients according to the classification of dry eye syndrome (OSDI)

Table 1. Distribution of patients according to the classification of dry eye syndrome (OSDI) and sex

	Dry eye syndrome							
	Normal		Mild		Moderate		Severe	
	n	%	n	%	n	%	n	%
Male	11	52,38	7	50,00	13	34,21	1	5,88
Female	10	47,62	7	50,00	25	65,79	16	94,12

P value = 0.009; n= Number; % = Percentage

Table 2. Distribution of eyes according to the results of the Schirmer test

	Number	Percentage
< 5 mm	20	14,28%
5 et 15 mm	54	38,57%
> 15 mm	66	47,15%
Total	140	100%

Table 3. Distribution of eyes according to the results of the Break Up time

	Number	Percentage
< 10 sec	36	25,71%
10 et 15 sec	70	50%
> 15 sec	34	24,29%
Total	140	100%

Discussion

In our study, we found a hospital incidence rate for pterygium of 1.9% over a 10-month study period. In 1997, Mvogo, *et al.* in Cameroon reported a hospital incidence rate of 1.10% [5]. Moukoury Nyolo, *et al.* reported a hospital frequency of 1.28% in 2009 in Cameroon [6]. Frequencies higher than ours have been reported in the literature. Numbi Ngoy, *et al.* in Lubumbashi, Democratic Republic of Congo, reported a frequency of 2.33% in 2019 [7]. The prevalence of pterygium varies from region to region, and this is thought to be due to varying exposure to ultraviolet radiation, one of the major favouring factors of this ophthalmological pathology.

In our study, the mean age of patients was 47.35 ± 12.2 years. Maneh, *et al.* reported in 2017, a mean age of 45.3 ± 10.97 years for patients with pterygium [8]. Numbi Ngoy, *et al.* found a mean age of 48.3 ± 14.83 years [7]. Mvogo, *et al.* reported a lower mean age of 41.76 years [5]. These results lead us to conclude that pterygium is a disease of adults. Rezvan, *et al.* [9] and Song, *et al.* [10] noted in their meta-analyses that the prevalence of pterygium increases with age.

Irritative symptoms such as eye pain, pruritus and tearing were predominant in this study. Ayena, *et al.* also reported similar complaints [11]. These functional complaints are not always related to pterygium, but are more frequently found in dry eye symptomatology.

In our series, the mean OSDI score was 32.55. The OSDI score was normal in 23.33% of cases, compared with 76.67% with dry eye syndrome. Dry syndrome was mild for 14 patients (15.56%), moderate for 38 patients (42.22%) and severe for 17 patients (42.22%). The OSDI questionnaire is used to assess the symptoms and severity of dry eye syndrome. Kucuk, *et al.* [12] in Turkey, in their study evaluating dry eye syndrome with the OSDI questionnaire, found a mean score of 24.5 ± 8.5 for the group of patients under 30 with pterygium, 23.0 ± 11.8 for the group of patients over 30 with pterygium and 17.2 ± 7.5 in the control group. Ye, *et al.* [13] reported a statistically significantly higher OSDI score in patients with pterygium compared with normal patients in the control group. Ünlü, *et al.* [14] in Turkey, in a comparative study between the OSDI score, the BUT and the Schirmer test, found an average of 37.12 in patients with daily computer use. The OSDI questionnaire could be an important tool for assessing dry eye syndrome in pterygium patients in the ophthalmology practice.

Severe dry eye syndrome was predominantly present in women at 94.12%, with a statistically significant correlation between gender and the existence of dry eye syndrome. These results are in line with the literature, which reports that female gender is a risk factor for dry eye [15, 16].

In our study, the mean BUT was 11.53 seconds and 75.71% of our patients had lacrimal instability. Our results are similar to those of Rahman, et al. who found an abnormal BUT in 75.6% of patients with pterygium [17]. Moukoury Nyolo, *et al.* in Cameroon found 54% of patients with abnormal BUT [6]. Kucuk, *et al.* found a BUT of 8.2 ± 4.2 for the group of patients under 30 with pterygium, 9.7 ± 5.1 for the group of patients over 30 with pterygium and 13.4 ± 5.1 in the control group [12]. This supports the hypothesis that lacrimal instability is a risk factor for the onset and progression of pterygium.

We reported lacrimal hyposecretion in 52.85% of cases on the Schirmer test. Moukoury Nyolo, *et al.* found 2.03% of patients with an abnormal Schirmer test [6]. Rahman, *et al.* found lacrimal hyposecretion in 9.3% of cases [17]. Most studies show that the Schirmer test is not very sensitive or specific in the diagnosis of dry eye. It is often biased by paradoxical lacrimation. In our study, lacrimal instability was found in a much higher proportion than lacrimal hyposecretion in subjects with pterygium. The BUT is the most reliable test for diagnosing dry eye, and could replace other tests with difficult reproducibility, such as the Schirmer Test [14, 17].

Conclusion

The study of dry eye in pterygium in Lomé revealed a hospital incidence rate of 1.9%, a mean age of 47.35 and a female predominance. Pain, pruritus and tearing were the most common complaints. In 76.67% of cases, pterygium patients in Lomé presented with dry eyes, with lacrimal instability in 75.71% of cases and hyposecretion in 52.85% of cases. The OSDI questionnaire and the BUT would be of great use in assessing dry eyes in patients with pterygium.

Authorship and contributorship

All the authors made significant contribution to the study.

Competing interest

The authors declare that they have no conflict of interest in relation to this article.

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