



ASSOCIATION OF DRY-EYE DISEASE IN RECURRENT PTERYGIUM

Ophthalmology

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ABSTRACT

Background- Pterygium is a common disease of the ocular surface. It is characterized by growth of conjunctival tissue on the cornea. Although the prevalence varies according to geographical location, it is reported to be around 10% worldwide **Methods-** Cross-sectional study was conducted on Patients with a history of pterygium excision(s) consecutively presenting for follow-up. Patients with known history of other ocular surface disease, which could cause dry-eye syndrome, including Sjogren syndrome, previous chemical injury, Stevens-Johnson syndrome, cicatricial pemphigoid, and contact lens wear **Results-** There was a statistically significant difference ($p = 0.01$) in the Schirmer test values between patients with and without recurrence after surgery for primary pterygium. Patients who were cured after a second excision had an improved Schirmer test value, although this was not significant. **Conclusion-** Pterygium recurrence is associated with a greater severity of dry eye, possibly by perpetuating ocular surface inflammation in the postoperative period

KEYWORDS

INTRODUCTION

Dry eye disease (also known as dry eye syndrome) refers to a group of disorders of the tear film that are due to reduced tear production or tear film instability, associated with ocular discomfort and/or visual symptoms and inflammatory disease of the ocular surface. The patient population includes individuals of all ages who present with symptoms and signs suggestive of dry eye, such as ocular irritation, redness, mucus discharge, fluctuating vision, and decreased tear meniscus or plugged meibomian glands.¹

Pterygium is a common ocular surface disorder, which is characterized by encroachment of a wing-shaped fibrovascular mass from the bulbar conjunctiva across the limbus and cornea. A key feature of pterygium is focal limbal failure and centripetal invasion of the cornea by altered limbal epithelial cells, which display squamous metaplasia and goblet cell hyperplasia.¹ This is accompanied by a breakdown of Bowman's layer and a stromal overgrowth of activated fibroblasts, inflammatory cell infiltrate, neovascularization, abnormal extracellular matrix accumulation, and elastosis. Although surgery is the definitive treatment for established pterygia, the risk of recurrence is high, approaching 88% in certain populations.² Few risk factors for recurrence have been established, including surgical technique, younger age, and worse morphologic grade (fleshiness).³ While numerous studies have investigated tear function abnormalities in primary pterygia, little is known about dry-eye disease (DED) as a risk factor for recurrent pterygium; we are aware of only 1 other study that compared DED in nonrecurrent versus recurrent cases of pterygium.^{4,5}

METHODS

Type of study- Cross-sectional study

Inclusion Criteria

Patients with a history of pterygium excision(s) consecutively presenting for follow-up

Exclusion Criteria

Patients with known history of other ocular surface disease, which could cause dry-eye syndrome, including Sjogren syndrome, previous chemical injury, Stevens-Johnson syndrome, cicatricial pemphigoid, and contact lens wear

Patients were divided across 3 groups –

Group 1: no recurrence after the first excision;

Group 2: recurrence after the first excision;

Group 3: no recurrence after the second excision

All patients in Group 1 underwent excision of the pterygium followed by transplantation of conjunctival autograft by a single surgeon (M.C.). Group 2 consisted of patients with recurrence of pterygium who were referred to the practice by other ophthalmic surgeons, as well as 3 cases of recurrent pterygium following surgery by M.C. Group 3 consisted of patients who had all undergone a second pterygium excision for recurrent pterygium by M.C., except for 1 patient who had

the second excision performed externally. A history of dry-eye symptoms was obtained, and examination under slit-lamp biomicroscopy was performed before tear film assessment based on Schirmer test with local anesthesia was done. Data analysis- All analyses were conducted with SPSS 22 and were interpreted with a two-tailed α of 0.05. Nonparametric tests were used to assess between-group differences (Mann-Whitney U test). χ^2 analyses were used to ascertain, if the percentage of patients with dry-eye symptoms was associated with group status.

RESULTS

Table 1. Demographic Data Of The Study Participants

Variable	Group-I	Group-II	Group-III	p-value
Mean age in yrs	54.23±12.36	51.23±13.26	52.26±12.89	0.236
Male : female	9:16	9:16	9:16	0.631

Table 2. Demographic Data Of The Study Participants

Variable	Group-I	Group-II	Group-III	p-value
Excisions	1	1	2	0.326
Surgery outcome	No recurrence	Recurrence	No recurrence	Na
Eyes	26	24	26	
Dry-eye symptoms reported	15	19	17	0.236
Schirmer test	Mean Median	5.23±7.63 4	5.42±7.63	0.02 6

DISCUSSION

Chronic UV light exposure is accepted as an important factor in the pathogenesis of pterygium⁶ UV light-mediated oxidative stress and limbal damage play an important role in pterygium pathogenesis⁷ However, many people living in the same environmental conditions with the same UV light exposure do not develop pterygium. Also, although both eyes of an individual are exposed to same amount of ultraviolet radiation (UVR), pterygium is frequently unilateral.⁹ The proposed UVR focus at the nasal limbus does not completely explain the formation of temporal corneal pterygium.¹⁰ Other factors are also likely involved in the pterygium pathogenesis. The effect of UVR exposure is believed to be cumulative due to chronic exposure. The prevalence of pterygium has been reported to be lower in young people and to increase with age.¹¹

Recently, in a meta-analysis, Rezvan et al.¹² evaluated 68 studies with a total of 415,911 participants and investigated the global prevalence and risk factors for pterygium. Similarly, they found that the prevalence of pterygium increased with age.

Another meta-analysis from China also found that age was a significant risk factor for pterygium¹³ They linked this finding to the effects of UVR exposure and increasing vulnerability in older people in their study. However, it is also notable that the recurrence rate after pterygium surgery is reported to be higher in young pterygium

patients. Based on these data, we wanted to evaluate young patients with pterygium, since they have a lower cumulative exposure to UVR, and examining other factors may be more important in these patients. In this study, we evaluated one of the other proposed factors, the presence of dry eye, in young pterygium patients. There are several studies evaluating tear function tests in pterygium patients; however, the mean age was typically above 40 years in these studies¹⁴⁻¹⁵

CONCLUSION

DED is associated with pterygium recurrence after primary pterygium excision and conjunctival autograft and could therefore be an important underrecognized risk factor. Diagnosing and managing DED in the perioperative period could therefore reduce the risk of recurrence by decreasing ocular surface inflammation.

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