

case report

Unexpected Histological Findings in Pterygium

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ABSTRACT

Pterygium is thought to be a common benign lesion of the corneo-conjunctival limbus. We report a case in which the pathological examination of an apparently trivial pterygium disclosed the presence of a conjunctival intraepithelial neoplasm in a 53-year-old white male who has been living in Kenya for 35 years. An atypical grayish area on the lesion convinced the surgeon to request the histological examination.

Key Words: pterygium, neoplasia, diagnosis, prognosis, therapy

Pterygium is a degenerative hyperplastic process arising in the corneal-conjunctival limbus. Irritation of the eye by ultraviolet (UV) light in sunny, dry, dusty areas and repeated microtrauma can lead to development of pterygium in susceptible individuals.¹⁻⁹ An autosomal dominant pattern of heredity, characterized by weak penetrance, is reported by several authors.^{6,10} Recently Erie et al. reevaluated 248 conjunctival and corneal specimens, and in 9 cases changed the original diagnosis of pterygium to conjunctival intraepithelial neoplasia (CIN).¹¹

We report another case in which the pathological examination of an apparent pterygium disclosed the presence of a CIN.

CASE REPORT

In November 1991 a 53-year-old white male in excellent general health presented with severe irritation of both eyes related to the presence of pterygia. He had been living in Kenya for 35 years. The clinical aspect was unremarkable, except for the

presence of a grayish gelatinous elevation extending from the limbus 4 mm into the cornea in the left eye. His visual acuity was 6/6 (20/20) in each eye with correction (small against-the-rule cylinder). History of topical administration of steroid eye drops was noted. A few weeks later the patient underwent surgical excision of both pterygia. The left eye specimen revealed unexpected histological features of squamous cell carcinoma, including dyskeratosis, cellular atypism, and loss of polarity (Fig. 1), whereas the right eye sample showed typical elastotic degeneration of the collagen (Fig. 2).

DISCUSSION

Pterygium is thought to be a common benign lesion of the corneo-conjunctival limbus. The idea that sunlight itself may be a major risk factor in the pathogenesis of pterygium is widely accepted. Support for this hypothesis comes from the increasing prevalence of pterygium nearer the equator, where sunlight UV intensity is stronger.¹²⁻¹⁴ This seems to be consistent with our case report. Light microscopy shows thickening of the epithelium, with a tendency to keratinization, hyalinization with fatty degeneration of the underlying connective tissue, and fragmentation of elastic fibers with possible subsequent disintegration.

Conversion of a pterygium to a neoplasm has been reported in some studies. Ash and Wilder¹⁵ emphasize such histopathologic features as dyskeratosis, hyperkeratosis, acanthosis, and atypical cells in their specimens. Sevel and Sealy¹⁶ consider these pathological findings (cell type and degree of dysplasia) to indicate "active pterygia." Several authors point out a positive correlation between the carcinogenic effect of UV light and the conversion of pterygia to neoplasia, providing further evidences of a causal relation.^{14,17} An experiment with mice showed that large doses of UV radiation produce

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Figure 1. Left eye specimen showing dysplastic features: cell enlargement, pleomorphism, and increased nucleocytoplasmic ratio (cellular atypism) [↓] and loss of the normal maturational sequence of cells from the basal layer to the epithelial surface (loss of polarity).



Figure 2. Pterygium specimen. Elastoid degeneration of the collagen [*], without dysplastic signs.



epithelial hyperplasia, degeneration of Bowman's membrane, and vascularization of corneal stroma.¹⁸

The atypical grayish area on the pterygium in the left eye convinced us to perform a histological examination. This finding should be regarded as an important diagnostic sign in this condition.¹⁹ Preoperatively clinical differentiation between CIN and a benign limbal lesion is usually not difficult. CIN's are characterized by a gelatinous thickening of the epithelium (acanthosis), by varying degrees of leukoplakic change (pearl white areas caused by hyperkeratosis, parakeratosis, and dyskeratosis), and abnormal vascularization. Ocular CIN's have a spectrum of degree of malignancy and this spectrum can be divided roughly into four categories: (1) benign; (2) premalignant (dysplastic); (3) locally

malignant (carcinoma *in situ*); and (4) frankly malignant (squamous cell carcinoma). Once extension beyond the epithelium has occurred the term CIN no longer applies, constituting, by definition, squamous carcinoma.

Exfoliative cytologic studies might serve to distinguish neoplasia from benign lesions but cannot determine the degree of invasion. Surgical excision is required in almost all suspected situations,²⁰ followed by cryotherapy to the remaining adjacent conjunctiva. Recurrence rate of CIN after excision is significant, and does not correlate with the degree of dysplasia. An important prognostic sign for recurrence seems to be the involvement of the margins of the initial excision.¹¹

Our case report confirms that specimen exami-

nation should be performed routinely in all atypical pterygia because of the possibility of initial misinterpretation.

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REFERENCES

1. Moran DJ, Hollows FC. Pterygium and ultraviolet radiation: a positive correlation. *Br J Ophthalmol* 1984;68:343-6.
2. Karai I, Horiguchi S. Pterygium in welders. *Br J Ophthalmol* 1984;68:347-9.
3. Norman H. Cited by Duke-Elder WS. *Textbook of Ophthalmology*. St Louis: CV Mosby & Co, 1954:573-85.
4. Sellar E. Eye disease in Greenland. *Ugersk Laeger* 1949;111:529-32.
5. Nicholls JVV. A survey of the ophthalmic status of the Cree Indians at Norway House, Manitoba. *Can Med Assoc J* 1946;54:344-50.
6. Small RG. Pterygium. In: Hornblass A, ed. *Oculoplastic, Orbital and Reconstructive Surgery*, vol 1: Eyelids. Baltimore: William & Wilkins, 1988:693-703.
7. Cornand G. Le pterygion. Evolution et traitement. *J Fr Ophthalmol* 1990;13:33-45.
8. Hervouet F, Lenoir A, Chevannes S. Mise au point du pterygion. *Bull Soc Ophthalmol Fr* 1954;67:444-60.
9. Friede R. Die Pathogenese des Echten Pterygiums. *Acta Ophthalmol (Kbh)* 1949;27:507-15.
10. Balestrazzi E. *Anatomia ed Istologia Patologica Oculare Rom*: EMSI Ed 1984:70-5.
11. Erie JC, Campbell RJ, Liesegang TJ. Conjunctival and corneal intraepithelial and invasive neoplasia. *Ophthalmology (Rochester)* 1986;93:176-83.
12. Cameron ME. *Pterygium Throughout the World*. Springfield, IL: Charles C Thomas, 1986.
13. Darrell RW, Bachrach CA. Pterygium among veterans. *Arch Ophthalmol* 1963;70:158-69.
14. Balo K, Kpodzro K. Histopathologie oculaire au Togo. *Med Afrique Noire* 1989;11:865-70.
15. Ash JE, Wilder HC. Epithelial tumors of the limbus. *Am J Ophthalmol* 1942;25:926-32.
16. Sevel D, Sealy R. Pterygia and carcinoma of the conjunctiva. *Trans Ophthalmol Soc UK* 1968;88:567-78.
17. Clear AS, Chirambo MC, Hutt MSR. Solar keratosis, pterygium, and squamous cell carcinoma of the conjunctiva in Malawi. *Br J Ophthalmol* 1979;63:102-9.
18. Lippincott SW, Blum HF. Neoplasm and other lesions of the eye induced by ultraviolet radiation in strain A mice. *J Natl Cancer Inst* 1943;3:545-54.
19. Dark AJ, Streeten BW. Preinvasive carcinoma of the cornea and conjunctiva. *Br J Ophthalmol* 1980;64:506-14.
20. Gelender H, Forster RK. Papanicolaou cytology in the diagnosis and management of external ocular tumors. *Arch Ophthalmol* 1980;98:909-12.

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