Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Case Report

Ocular surface squamous neoplasia

Lt Col Sonali V. Kumar^{a,*}, Air Cmde D. Joshi^b^aClassified Specialist (Ophthalmology), Command Hospital (Air Force), Bengaluru, India^bProfessor & Head (Ophthalmology), INHS Asvini, Colaba, Mumbai, India

ARTICLE INFO

Article history:

Received 10 September 2016

Accepted 5 January 2017

Available online 16 February 2017

Keywords:

Ocular surface squamous neoplasia

Pterygium

Dysplasia

Introduction

The ocular surface consists of the cornea, limbus and conjunctiva with mucosa of the ocular adnexa (lacrimal gland and lacrimal drainage apparatus). The epithelium of the cornea and conjunctiva is formed from differential of the surface ectoderm during embryonic development. Corneal epithelium is of stratified squamous type and becomes continuous with epithelium of the bulbar conjunctiva at the limbus which is also squamous type of epithelium. Squamous cells are basically superficial cells with flattened nuclei which periodically slough off into the tear film. Ocular surface squamous neoplasia (OSSN) refers to a spectrum of benign, pre-malignant and malignant, slowly progressive epithelial lesions of the conjunctiva and cornea. Lee et al from Australia first coined the term OSSN in 1995.¹ The lesions may be papilliform, leukoplakic, gelatinous or nodular appearing mostly at the limbus.² This condition closely mimics pterygium which usually presents as a triangular fleshy mass, starting on the sclera, but often goes on to invade the limbus and cornea. Both conditions can present with similar

symptoms such as foreign body sensation, irritation and redness. OSSN has been reported to even masquerade as corneal ulcer, blepharoconjunctivitis, pterygium, necrotising scleritis and sclerokeratitis.^{3–6} We report a case of OSSN, which was initially diagnosed as pterygium and managed conservatively. However when the lesion continued to increase in size, the patient was compelled to seek a second opinion and was managed and diagnosed at this centre as a case of OSSN on the basis of clinical appearance and histopathology.

Case report

A 76-year-old male patient presented with complaints of growth in his left eye since 1 year which was progressively growing in size and associated with redness, watering and mild pain. He did not have visual complaints. The patient had undergone cataract extraction and posterior chamber intraocular lens implantation in both eyes 3 years ago. There was no history of trauma to the left eye in the past. The patient sought eye consultation at a civil hospital where he was diagnosed as a case of pterygium and treated with lubricants. However, he

* Corresponding author.

E-mail address: sonaliv91775@hotmail.com (S.V. Kumar).<http://dx.doi.org/10.1016/j.mjafi.2017.01.006>

0377-1237/© 2017 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

Fig. 1 – Ocular surface squamous neoplasia (left eye): preoperative appearance showing fleshy mass with feeder vessel at the base.

Fig. 2 – Ocular surface squamous neoplasia (left eye): immediate postoperative appearance.

noticed that the growth had progressed rapidly over the last 3 months, for which he reported to this centre.

The general and systemic examinations were within normal limits. There was no regional lymphadenopathy. Ocular examination revealed that the best corrected visual acuity in the right eye was 6/6 with -1.0 DSph and 6/6 with -3.0 Cyl 180° in the left eye. Both eyes were pseudophakic with well-centred intra ocular lens (IOLs) and healed superior scleral cataract surgery wound. The posterior segment in both eyes was normal.

Slit lamp examination of the left eye revealed an elevated fleshy conjunctival mass about $3\text{ mm} \times 3\text{ mm}$ at the limbus between 4 and 6 o' clock position, extending $2\text{ mm} \times 2\text{ mm}$ into the cornea (Fig. 1). The lesion was gelatinous and vascularised with the presence of a feeder vessel at the base of the growth. Gonioscopy examination revealed open angle in both eyes without involvement of angle in the left eye. Serology test for human immunodeficiency virus (HIV) was negative.

A provisional diagnosis of OSSN left eye (LE) was made based on the clinical features. A 'no touch' technique avoiding direct manipulation of the lesion by holding the healthy conjunctival tissue is employed to prevent tumour seedling into new area. The patient was subjected to wide surgical

Fig. 3 – Ocular surface squamous neoplasia (left eye): histopathological appearance showing dysplasia of epidermis with intact basement membrane depicted by yellow arrow, also showing mitosis (blue arrow) and hyperchromatic nuclei (black arrow).

excision of the lesion keeping a 2 mm clear margin. Cryotherapy of the conjunctival edge and base was done using a double freeze-thaw technique. The specimen was sent for histopathological examination. The defect was closed primarily with 8-0 polyglactin suture as the defect was less than 3 clock hours. Since the size of the growth varied at about 2 clock hours as well as wide surgical excision (2 mm clear margin) could also be achieved, no antimetabolic adjunctive therapy was given. Post-operatively, the patient was started on topical antibiotic with steroid tapering over 4 weeks (Fig. 2).

Histopathological examination revealed full thickness dysplasia of epidermis with an intact basement membrane. The dysplastic areas showed mitosis and pleomorphic hyperchromatic nuclei (Fig. 3). The patient was followed up at 3 and 6 months, and no clinical sign of recurrence was found (Fig. 4). He has been advised to follow up every 6 months at this centre.

Discussion

OSSN represents a spectrum of diseases ranging from mild dysplasia to carcinoma in situ and to invasive squamous cell

Fig. 4 – Ocular surface squamous neoplasia (left eye): postoperative appearance after 3 months.

carcinoma involving the conjunctiva and cornea. It is a disease of the elderly having predilection for the corneoscleral limbus of the interpalpebral area in 87.8% of cases.⁷ Advanced age, male gender, exposure to solar ultraviolet light, immunosuppression and infection with HIV and infection with human papilloma virus (especially type 16) are implicated in the development of OSSN. OSSN has a varied clinical presentation, and the definitive diagnosis of which is based on histopathological examination of the excised lesion.⁸ Though OSSN is a low-grade malignancy and local infiltration and metastasis are rare, delay in diagnosis and management may necessitate extensive surgery and even exenteration.⁹ Early and appropriate diagnosis and treatment of OSSN is, therefore, important. Ocular surface tumours are relatively rare with an incidence of 0.13–1.9 per 100,000.^{1,10} Hence there is lack of awareness of this clinical entity which may be responsible for late diagnosis in many cases. In the early stages, it may be difficult to distinguish OSSN from other common conjunctival lesions such as pterygium and pinguecula. Pterygium is a fibrovascular, wing shaped encroachment of the conjunctiva over the cornea on the nasal side but may occasionally be seen on the temporal side. It may be thick, fleshy and vascularised indicative of a progressive nature of the lesion or thin and papery, dry and pale in colour suggesting that it will most probably remain stationary. It is frequently seen in young adults. The exact aetiology is not known, but it is thought to be due to dryness of the conjunctiva produced by dust, heat, sunlight and hot winds. Histologically, there is elastotic degeneration of the collagen tissue of the stroma of the conjunctiva. Whereas, pinguecula is an innocuous condition, and it is seen as a yellow-white deposit on the conjunctiva adjacent to the limbus.

Presence of a feeder vessel and high index of clinical suspicion, especially in elderly patients, should draw attention and help in early diagnosis of OSSN.

This case highlights the need for assiduous evaluation of all pterygium cases and recalcitrant cases of conjunctival inflammation with involvement of cornea and limbus.

Conflicts of interest

The authors have none to declare.

REFERENCES

1. Lee GA, Hirst LW. Ocular surface squamous neoplasia. *Surv Ophthalmol*. 1995;39:429–450.
2. Shield CL, Shoeld JA. Tumours of the conjunctiva and cornea. *Surv Ophthalmol*. 2004;49:3–24.
3. Sridhar MS, Honavar SG, Vemuganti G, Rao GN. Conjunctival intraepithelial neoplasia presenting as corneal ulcer. *Am J Ophthalmol*. 2000;129:92–94.
4. Akpek EK, Polcharoen W, Chan R, Foster CS. Ocular surface neoplasia masquerading as chronic blepharoconjunctivitis. *Cornea*. 1999;18:282–288.
5. Mirza E, Gumus K, Evereklioglu C, et al. Invasive squamous cell carcinoma of the conjunctiva first misdiagnosed as a pterygium: a clinicopathologic report. *Eye Contact Lens*. 2008;34:188–190.
6. Lindenmuth KA, Sugar A, Kincaid MC, Nelson CC, Comstock CP. Invasive squamous cell carcinoma of the conjunctiva presenting as necrotizing scleritis with scleral perforation and uveal prolapse. *Surv Ophthalmol*. 1988;33:50–54.
7. Chen C, Louis D, Dodd I, Muecke I. Mitomycin C as an adjunct in the treatment of localized ocular surface neoplasia. *Br J Ophthalmol*. 2004;88:17–18.
8. Mittal R, Rath S, Vemuganti GK. Ocular surface squamous neoplasia – review of etio-pathogenesis and an update on clinico-pathological diagnosis. *Saudi J Ophthalmol*. 2013;27:177–186.
9. Char DH, Crawford JB, Howles EL, et al. Resection of intraocular squamous cell carcinoma. *Br J Ophthalmol*. 1992;76:123.
10. Coroi MC, Rosca E, Mutio G, Coroi T. Squamous carcinoma of the conjunctiva. *Rom J Morphol Embryol*. 2011;513:515.