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Case Report Open Access

A Case of a Corneal Melanoma with Superficial Stromal Involvement

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Abstract

Purpose: To report a rare case of a malignant corneal melanoma with superficial stromal involvement.

Methods: This is a report of a 43-year old male who developed a gradually enlarging pigmented mass on the temporal limbus extending to the cornea of the right eye, accompanied by blurred vision. Ultrasound biomicroscopy revealed no conjunctival involvement, but with possible penetration of the Bowman's layer. The patient subsequently underwent an excision biopsy using the "no touch technique" with cryotherapy.

Results: On histopathologic examination, pigmented cells forming nests were seen extending from the corneal epithelium up to the stroma. This confirmed a diagnosis of corneal melanoma.

Conclusions: Although uncommon, melanomas can present in the cornea with involvement of the epithelium up to the stroma. Therefore, appropriate laboratory examinations are vital for the diagnosis of such cases. To prevent tumor seeding to adjacent tissues, excision without touching the tumor is advised.

Keywords: Malignant melanoma; Cornea; Primary acquired melanosis

Introduction

Conjunctival melanoma cases range from 0.45 to 0.8 per million, comprising 2% of all eye malignancies [1]. Melanomas may present in the cornea from an adjacent conjunctival nevus, primary acquired melanosis or, rarely, without apparent conjunctival involvement. Reports of conjunctival melanomas with corneal extension revealed more than 50% recurrence after ocular treatment [1]. We report a rare case of a middle-aged Asian adult with a corneal melanoma showing stromal invasion.

The Case

A 43 year-old male presented with a mass in his right cornea of 3 months duration. This was associated with blurred vision, photophobia and pain on blinking. The left eye was eviscerated for trauma with a broken glass 2 years prior to consult, and an artificial eye is now in place. Vision for the right improves to 20/25 sans correction with the Snellen Test. A 10 × 4 × 3 mm pigmented corneal mass partly obscured the temporal 1/3 of the pupil (Figure 1). The tumor paralleled the limbus with surrounding conjunctival feeder vessels. No other pigmented conjunctival or lid lesion was observed. Ultrasound biomicroscopy showed absence of the reflective line of the epithelium and Bowman's in some areas of the underlying cornea, indicating possible penetration. An excision biopsy was then done using the 'no touch technique'. A No. 15 Blade was used to dissect the tumor from the corneal surface. Cryotherapy 360 degrees of the margins of the lesion were also done. Histopathologic examination showed intraepithelial invasion by pigmented, pleomorphic cells with extension to the anterior corneal stroma (Figure 2). Postoperatively, there was note of a mild stromal haze over the resected site. The patient reported subjective improvement in vision, however he was lost to follow up two weeks after surgery for succeeding management.

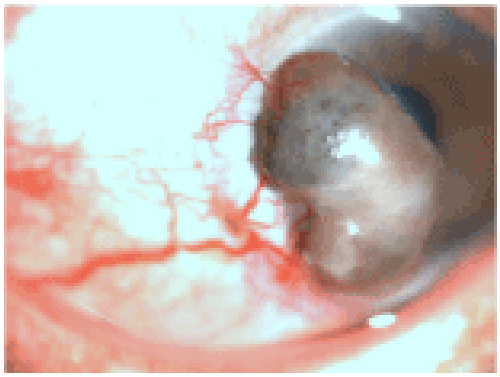

Figure 1: A right pigmented corneal mass in an adult male with feeder vessels from the temporal conjunctiva is seen.

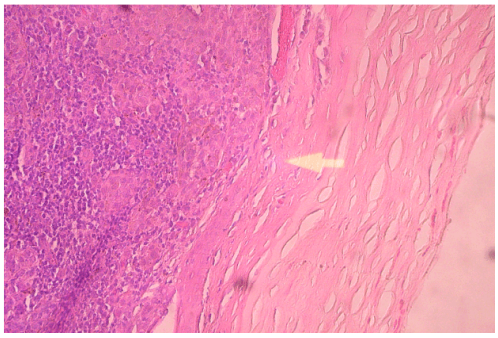

Figure 2: The excised mass showed intraepithelial invasion by pigmented, pleomorphic cells with extension to the anterior corneal stroma (arrow) (hematoxylin and eosin, x20).

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Discussion

Corneal melanomas are thought to arise from contiguous spread of an adjacent conjunctival melanoma or from malignant change in limbal melanocytes that migrated into the corneal epithelium from the limbus, in conjunction with primary acquired melanosis (PAM) of the conjunctiva with atypia [2-4]. Other reports hypothesize development from either the Schwann cells of the corneal nerves or from the basal cells of the epithelium [4]. In our literature search, only the study by Tuomaala et al. reported an incidence of 5% of malignant melanomas limited to the cornea (4 of 85 cases), half of which without evidence of conjunctival PAM [3]. It is known that conjunctival melanomas, unlike their uveal counterparts, are capable of lymphatic spread.

Excision biopsy is recommended for small malignant-looking tumors up to 15 mm basal diameter or involving not more than 4 clock hours of the limbus [2]. The 'no touch technique' is often employed to prevent microscopic seeding. Corneal melanomas are usually intraepithelial or subepithelial, and can be easily peeled off with simple excision and dissection of the underlying bed [3]. It is believed that the Bowman's is a barrier against intraocular extension, thus care is taken not to penetrate this layer [1,3]. Following tumor removal, repeated freeze-thaw cycles of cryotherapy is applied to the margins of the adjacent bulbar conjunctiva lifted away from the underlying sclera. Shields and Shields reported that cryoapplication over the corneal margins is not necessary, however the surgeon for this case decided to do so. It must be noted that this is the patient's only eye, as fellow eye was lost to trauma.

Histopathologically, corneal melanomas exhibit malignant melanocytes with variable pigmentation [2]. Usually, the adjacent conjunctiva will show evidence of primary acquired melanosis or PAM. The specimen we obtained showed superficial invasion to the anterior corneal stroma, indicating higher risk for intraocular recurrence. Unfortunately, the patient was lost to follow up for long-term management.

References

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