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Corneal fibroma: An uncommon stromal tumor

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A 56-year-old male patient presented with a slow-growing, elevated, smooth, white corneal mass. The mass was excised by performing an alcohol-assisted keratoepitheliectomy and sent for histopathological examination. Subepithelially, closely packed spindle cells in "feather-stitched" or storiform pattern were seen. Immunohistochemically, the cells stained negatively for CD-34 and S-100 and focal positivity was seen for vimentin. Based on the morphology and immunochemical staining, a diagnosis of corneal fibroma was made. No recurrence was seen. Corneal fibroma is an exceedingly rare, benign tumor and possibly lies on the same spectrum as corneal keloid and hypertrophic cicatrix. Surgical resection is usually curative.

Key words: Cicatrix, corneal keloid, dermoid, limbus, neoplasm, ocular surface squamous neoplasm

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Fibromas of the ocular surface are uncommon tumors. While fibromas arising from the conjunctiva have been reported in literature, corneal fibromas are rare.[1-3] In this communication, we present the case of a corneal fibroma in an otherwise healthy male and discuss the histopathological features of this entity.

Case Report

A 56-year-old male patient presented with an 8-month-old history of a slow-growing, white mass in his left eye. There was no pain or any other associated ocular complaints. Visual acuity in both eyes was recorded at 6/6 N6. Intraocular pressures, dilated fundus examination, and ocular motility were normal. On slit-lamp examination, the left eye showed a small elevated smooth, white-colored mass measuring 3 mm × 3 mm × 2 mm, present on the edge of the cornea at the 6'o clock position [Fig. 1]. Few dilated, small caliber vessels were seen within the mass; in addition, one feeder vessel was also seen, whose path could be traced inferiorly on the conjunctiva. No keratin deposits were seen on the mass and it stained negatively for rose bengal. The right eye examination was unremarkable. The patient had previously undergone a pterygium excision with conjunctival autograft placed in the left eye, 4 years before the present visit. The pterygium was located temporally, and histopathological examination of the excised lesion confirmed the clinical diagnosis. The postoperative period was uneventful until recently when the patient was concerned about yet another growth in the left eye at a different site; which prompted this visit. Systemically, the patient was healthy and immunocompetent with no systemic illnesses.

The differentials considered at this point included pyogenic granuloma and ocular surface squamous neoplasm. The location of this mass was entirely different from the

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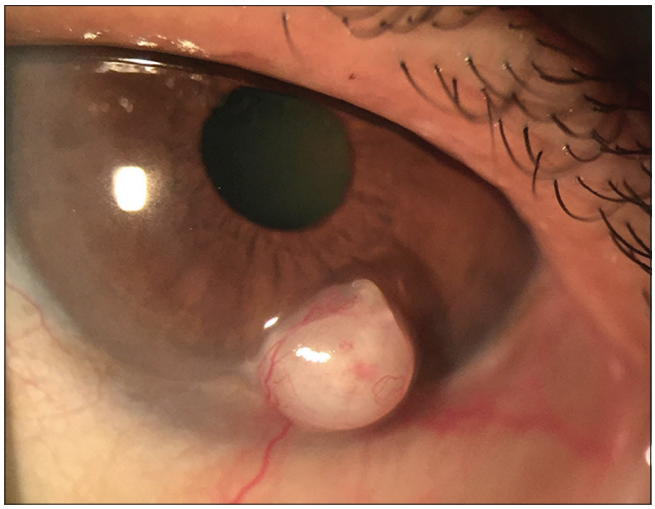

Figure 1: A clinical picture of the corneal mass. Note the few intralesional blood vessels and the feeder vessel inferiorly

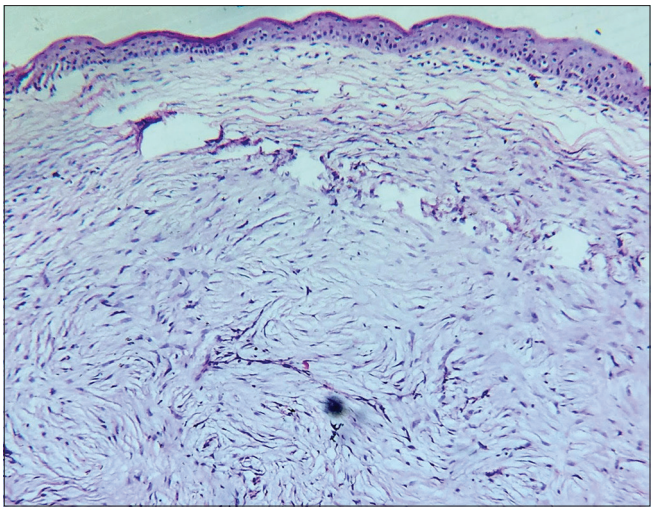

Figure 2: A photomicrograph of the excised mass. The epithelium above is intact and subepithelially, closely packed spindle cells in a "feather-stitched" or storiform pattern can be seen (H and E, ×40)

previously excised pterygium, and because of its unusual morphology, a recurrent pterygium was not considered to be a possibility. A corneal keloid was also a differential that was discussed. The mass was eventually excised with 3 mm conjunctival margins: alcohol-assisted keratoepitheliectomy was performed to remove the mass in toto. Intraoperatively, the mass was not adherent to the underlying corneal stroma and could be easily excised. The defect was covered with an amniotic membrane.

The histopathological examination was remarkable: the corneal epithelium was intact over the mass and subepithelially, closely packed spindle cells in "feather-stitched" or storiform pattern were seen; some whorls were also noted [Fig. 2]. None of the cells exhibited any atypia and no mitotic figures were seen. A few vascular elements were seen which anatomically collaborated with the small blood vessels seen clinically. There were no unusual extracellular stromal deposits. There were no significant vascular patterns or inflammatory infiltration. Immunohistochemically, the cells stained negatively for CD-34, S-100 and showed weak focal positivity for vimentin; thereby ruling out tumors of vascular and neural origin. Based on the morphology, location, and immunochemical staining, a diagnosis of corneal fibroma was made. The recovery was uneventful, and there was no recurrence of the mass lesion seen at 6-month follow-up.

Discussion

Fibromas of the ocular surface are exceptionally rare. Conjunctival or epibulbar fibromas are speculated to arise from the Tenon's fascia.[1,2] In our case, the mass was seen located on the cornea and inferior to the mass; the anatomical limbus could be distinctly identified. Fibroma, keloid, and hypertrophic cicatrix are classified as fibrous tumors of the ocular surface and possibly represent different end points on the spectrum of corneal tissue healing.[3] This explanation seems plausible since the cellular components of each of these conditions are essentially the same with the cellularity and activity being the key differentiating features. Therefore, all the three should have been considered as possible differentials in this case. Although there was a history of an antecedent surgery, which may lead to the formation of a reactive scar or a keloid, the long interval since the previous surgery, the slow rate of growth, and completely different location from the previous surgery helped us rule out a keloid and cicatrix clinically. Histopathologically, the typical pathognomonic histopathological features of corneal keloid: thickened keratinized epithelium, absence of the Bowman layer, and fibrovascular hyperplasia helped us differentiate this lesion microscopically. Furthermore, immunohistochemical studies of keloids have uniformly reported strong immunopositivity for vimentin in active fibroblasts and α-smooth muscle actin in myofibroblasts.[4] The proliferating spindle cells representing fibroblasts stain positively for vimentin.[5] In our case, the vimentin positivity was sparse indicating a low rate of cellular turnover. This was further corroborated with a Ki-67 index of <5%. Negative staining for CD-34 ruled out a solitary fibrous tumor.

The only previously reported corneal fibroma is a case of 16-year-old girl with a white mass on the cornea, which was present since birth. A lamellar keratoplasty was performed to remove the mass. Histopathological examination revealed a well-circumscribed mass composed of typical spindled fibroblasts closely packed with abundant collagenous stroma consistent with fibroma.[3] In this case, however, the mass had a limbal component, or as the authors mention, the mass was "limbocorneal" in location. Corneal fibroma maybe seen as a part of infantile myofibromatosis where single or multiple fibromas are seen all over the head, lids, and neck.[6]

Conclusion

In summary, fibromas are reactive proliferation of underlying fibrous tissue covered by benign epithelium. Corneal fibromas are relatively uncommon, and surgical excision is largely curative.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients

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understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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