Case report

Anterior uveitis secondary to intraocular fiber from a hair enhancement product

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ABSTRACT

Purpose: To report a case of anterior uveitis caused by migration of cosmetic “hair-building fibers” into the anterior chamber and discuss previous literature describing ocular disease caused by small foreign fibers.

Observations: A 73 year old male presented with his first episode of acute anterior uveitis. He was found to have a white fiber penetrating through the cornea into the anterior chamber. This foreign body was removed. The patient identified the material as a being from the cosmetic hair-building fiber product he had been using called Toppik. He was treated with topical steroids and antibiotic drops. The uveitis resolved without recurrence by six weeks after his initial presentation.

Conclusions: Small synthetic and non-synthetic fibers represent sources of both superficial and intraocular injury. Careful examination of the anterior chamber is critical in patients with new acute uveitis to identify possible foreign fibers that can migrate through the cornea. While medical therapy with topical steroids may suffice for treatment in many cases, intraocular persistence of these materials can result in recurrent inflammation, ocular hypertension, or further migration into the posterior chamber which may require surgical intervention.

1. Introduction

Acute anterior uveitis can often represent a diagnostic challenge to clinicians due to the wide range of potential etiologies including systemic or localized infectious and inflammatory processes.\textsuperscript{1} Although rare, small fibers such as teddy-bear fibers and insect hairs have been found to cause both external ocular inflammatory changes as well as uveitis secondary to migration through the cornea.\textsuperscript{2–13} Our case represents a previously unreported cause of anterior uveitis due to a cosmetic hair-building fiber penetrating into the anterior chamber.

2. Case report

A 73 year old male with a past ocular history of plateau iris syndrome with early chronic angle closure glaucoma in both eyes presented to our emergency eye clinic complaining of a one day history of throbbing pain and redness of his left eye associated with photophobia. He reported a similar episode one month previously that spontaneously resolved. He denied changes in his vision, fevers, chills, rashes, weight loss, insect bites, cough, or arthritis. He was taking Latanoprost drops in both eyes for glaucoma. At presentation, his vision was 20/15 in each eye. Intraocular pressures in both eyes were 14 mmHg and 15 mmHg in the right and left eyes respectively which were stable from previous examinations. Slit lamp examination of the right eye was unremarkable. Examination of the left eye was significant for reactive ptosis, moderate conjunctival injection, and moderate cell and flare in the anterior chamber. There was a previously placed temporal peripheral iridotomy and posterior synechiae. No intraocular foreign body was noted at that time. There was no inflammation in the vitreous. The initial diagnosis was idiopathic anterior uveitis in the left eye and he was treated with topical steroids and mydriatic drops.

At the one week follow up examination, the patient’s symptoms had resolved. His visual acuity and intraocular pressure remained normal and unchanged. However, on slit lamp examination of the left eye there was now noted to be a pinpoint positive Seidel test at limbus at three o’clock with an associated full-thickness penetrating white fiber extending into the anterior chamber. (Fig. 1). There was no cell or flare in the anterior chamber. The foreign body was removed with jeweler’s forceps at the slit lamp after which the wound was Seidel negative. Upon further questioning, the patient identified the removed fiber as a hair-building fiber from the commercial product Toppik that he had been using to thicken the appearance of his hair. In retrospect, he also...
recalled previous eye irritation after spraying the product into his hair in the past. The fiber was independently compared to Toppik fibers and was found to be clinically identical (Fig. 2).

After removal of the intracorneal fiber, the patient was treated with topical steroids, mydriatics, and antibiotic drops. A routine uveitis screen was negative and cultures of the foreign body showed no growth. The patient was tapered off of the topical medications and has remained quiet 6 months after the initial presentation.

3. Discussion

Hair-building fibers are a hair enhancement product composed of small statically-charged fibers that are sprayed onto hair to give it a thicker appearance. To our knowledge, this is the first reported case of uveitis caused by hair-building fibers. There are a numerous case reports of ophthalmic disease secondary to filamentous foreign material. These fibers can be broadly divided into synthetic and non-synthetic. Most cases involving synthetic fibers have been in young children and are usually caused by stuffed toy animals (though blankets, bedding, and sweaters have been also been suggested as possible sources). In almost all of these cases, there was only superficial ocular involvement, often presenting with conjunctival granulomas in the inferior conjunctival fornix with no corneal or anterior chamber involvement. There was one reported case of keratitis secondary to a teddy bear fiber leading to a perforating corneal ulceration requiring corneal transplantation. Most cases of non-synthetic fibers have been reported secondary to caterpillar and tarantula setae. These fibers have a propensity to migrate into the eye over time and cause a condition known as Ophthalmia Nodosar. As described by Cadera et al., Ophthalmia Nodosar is classified into 5 types: 1) an immediate acute anaphylactoid reaction, 2) chronic mechanical keratoconjunctivitis leading to corneal abrasions, 3) granulomatous conjunctival nodule formation, 4) anterior chamber penetration causing iritis with possible iris nodule and hypopyon formation, and 5) posterior segment penetration resulting in vitreoretinal involvement.

There are many cases in the literature of anterior chamber and vitreoretinal involvement (type 4 and 5 ophthalmia nodosa) secondary to insect fibers. Conrath et al. describe a case of unilateral hypertensive keratouveitis secondary to anterior chamber caterpillar setae treated successfully with acyclovir, dexamethasone-gentamicin, and atropine. Blaikie et al. describe two cases of progressive panuveitis secondary to tarantula fiber migration through the cornea which remained active at 24 month and 72 month follow up and led to corneal granulomas, iritis, peripheral anterior synchiae, cataracts, vitritis, and chorioretinitis. One of these patients was being considered for vitrectomy due to developing decreased visual acuity and raised intraocular pressure non-responsive to systemic steroids and topical anti-glaucomatous drops. Sandboe et al. describe a case of keratouveitis secondary to tarantula fibers which caused recurrent anterior chamber reaction despite removal of the corneal hair fibers and treatment with topical steroids. Shibui et al. describe two cases of caterpillar setae induced endophthalmitis that was non-responsive to systemic and topical steroids requiring vitrectomy. In the same report, they also describe a case of caterpillar setae induced iridocyclitis also requiring vitrectomy. Our case is similar to type 4 ophthalmia nodosa which presents as anterior uveitis secondary to anterior chamber penetration of hair fibers. The Toppik fiber in our report represents a previously undescribed cause of intraocular-fiber induced anterior uveitis. Though not a purely organic fiber, like caterpillar setae or tarantula hairs, Toppik fibers are composed of naturally occurring keratin from sheep's wool, preservative compounds (ammonium chloride, silica, phenoxethanol, and chlorphenesin), and color dyes. Two mechanisms have been proposed for uveitis caused by non-synthetic fibers: Irritation resulting from destruction of ocular tissue with fiber migration as well as hypersensitivity reactions resulting from foreign antigens on material like insect fibers. It is possible that the chemical additives present in the Toppik fibers contributed to the anterior chamber reaction seen in our patient.

It is important to remember that these small fibers can be the cause of acute uveitis. Careful examination of the anterior segment is imperative in cases of idiopathic uveitis to rule out the presence of these types of foreign bodies. As seen in our case and other reported cases of fiber induced ocular injury, the inciting foreign body is often missed on initial exam causing a delay in diagnosis. These fibers are known to have the potential to progressively migrate deeper into the eye with time, making timely diagnosis crucial.

4. Conclusions

Although rare, small foreign fibers may penetrate the cornea and migrate intraocularly leading to uveitis. In patients with a new diagnosis of uveitis, ophthalmologists should consider possible exposures to these materials (such as through hair enhancement products, insects, or stuffed children's toys) and closely examine the eye for retained foreign fibers. If missed, these substances may lead to recurrent inflammation and subsequent ocular complications.

Patient consent

The patient consented to publication of the case in writing.
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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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References

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