

Journal of Coastal Life Medicine

journal homepage: www.jclmm.com



Case report doi: 10.12980/jclm.4.2016j5-115

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Bee sting keratopathy with retained stinger

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ARTICLE INFO

Article history:

Received 13 Jul 2015

Received in revised form 20 Jul 2015

Accepted 5 Oct 2015

Available online 23 Dec 2015

Keywords:

Striate keratitis

Corneal wasp sting keratopathy

Stinger

Venom

Bullous keratopathy

ABSTRACT

This case report aims to report an uncommon case of bee sting keratopathy with retained stinger. A 55-year-old man presented with left cornea bee sting while gardening two days prior to first visit. He complained of severe eye pain with redness, tearing and blurring of vision. On examination, his right eye visual acuity was 6/6 and in left eye was hand movement. There was generalized conjunctival hyperemia and cornea showing significant descemet striae. A bee stinger with surrounding infiltration noted at 2 o'clock was associated with striate keratitis. It was deeply seated at the posterior third of cornea stroma near to paracentral area. Pupil was mid-dilated with absence of relative afferent pupillary defect. There was neither hypopyon nor cataract. The posterior segment could not be visualized due to severe corneal edema. However, B-scan ultrasound was normal. Bee stinger was removed under local anaesthesia on the day of presentation. Post-operatively, patient was administered with topical moxifloxacin and topical non steroidal anti-inflammatory drugs. Three weeks later, there was resolution of cornea infiltrate with improvement of striate keratitis and his vision was improved to 1/60. However, cornea edema did not regress but ended up with bullous keratopathy. The patient has undergone descemet-stripping automated endothelial keratoplasty and his vision was improved to 6/9. We recommend early stinger removal to reduce the possible sequelae of bee sting toxicity for better visual outcome.

1. Introduction

Corneal bee sting is an uncommon ocular injury which can result in various complications with triad of penetrating, immunologic and toxic effects of the stinger and its injected venom[1].

2. Case report

A 55-year-old man presented with a bee sting injury to his left cornea while gardening two days prior to first visit. He complained of severe eye pain with redness, tearing and blurring of vision.

On examination, visual acuity in his right eye was 6/6 and in left eye was hand movement. There was generalized conjunctival hyperemia and cornea showing significant descemet striae. A deep seated bee stinger with surrounding infiltrate noted at 2 o'clock was associated with striate keratitis (Figure 1). It was deeply seated at the posterior third of cornea stroma near to paracentral area (Figure 2). Pupil was mid-dilated with absence of relative afferent pupillary defect. There was neither hypopyon nor cataract. The posterior segment could not be visualized due to severe corneal edema.

However, B-scan ultrasound was normal without vitritis.



Figure 1. Infiltrate noted at 2 o'clock associated with striate keratitis.

Patient was subjected to bee sting removal under local anaesthesia on the same day. He was given topical moxifloxacin and topical ketorolac. Three weeks later, there was resolution of cornea infiltrate with improvement of striate keratitis and his vision was improved to 1/60. Residue cornea edema was treated with topical hypertonic saline and topical maxitrol 4 hourly for 3 months (Figure 3).

At 3 months follow up, his vision improved to 6/48 but cornea edema did not regress and it was complicated with bullous keratopathy. The patient was referred to a cornea specialist for further

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management. Descemet-stripping automated endothelial keratoplasty was done and his vision improved to 6/9 after nine months of bee sting injury.

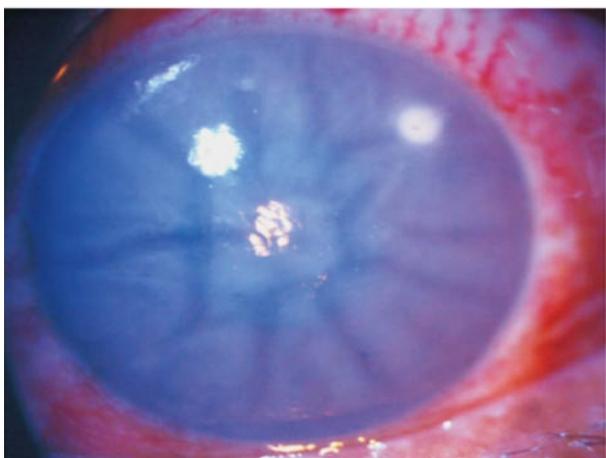


Figure 2. Bee stinger deeply seated at the center of infiltration.

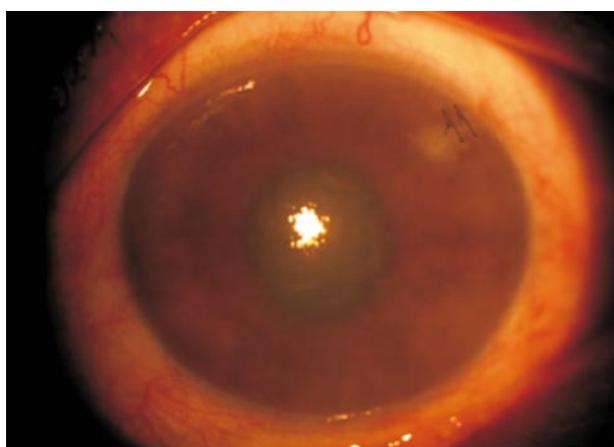


Figure 3. Persistent cornea edema after 3 months' treatment.

3. Discussion

Corneal bee sting injury is rarely reported but it can cause vision threatening complications. Reactions of the eye could involve anterior segment and posterior segment. Bullous keratitis is the most common clinical presentation which can persist for few months. Characteristically, a striate keratitis is pathognomonic finding in bee sting keratopathy. Our patient presented typically with a fine network of ridges in the corneal epithelium appearing surrounding the retained stinger[2,3].

A wide range of immunologic mediated effect on eyes, bullous keratopathy and glaucoma caused by acute trabeculitis, lens subluxation, anterior polar cataract, iris atrophy, iridoplegia, internal ophthalmoplegia, panuveitis, optic neuritis and papilloedema has been reported[4].

The main treatment of bee sting keratopathy is to prevent infection and suppress the toxic and immunological associated complications. However, due to the rarity of the injury, there is no established or standard guideline for the bee sting keratopathy management[1]. Ophthalmic antibiotic drops are indicated because bacteria are cultured from intraocular foreign bodies in 14% of cases. Topical gentamycin or a fluoroquinolone for antibiotic coverage is recommended[5]. Our patient was given moxifloxacin to cover Gram-positive and Gram-negative bacteria and he responded well to this treatment with resolution of cornea infiltration three weeks after treatment.

Although there is a controversy regarding the necessity of stinger removal, it is generally accepted that immediate removal of the stinger is required in cases associated with corneal edema and infiltrate[1]. The

retained intracorneal bee stingers released venom resulting in long-term corneal inflammation which may not be controlled adequately with topical steroid. The amount of venom injected correlates with the amount of time the stinger remains within[3]. Report of Teoh *et al.* also reviews that topical steroids and surgical removal of retained stinger may enhance visual recovery[4]. In view of this, early surgical removal of retained stinger was done on the same day of presentation. We recommend a corneal incision along the injured plane to remove the whole length of stinger. Removal stinger manually with forcep alone can cause retention of stinger fragment within the cornea[6].

There are case reports recommending combination of early surgical intervention and high dose steroid therapy has advantage of preventing sight threatening serious sequelae and rapid visual recovery by eliminating the venom and blocking the inflammatory response in early stage. However, cornea bee sting can sometimes be associated with secondary infection and high dose systemic steroid can be disadvantageous in these situations[7,8]. Thus, high dose systemic steroid is not routinely used in all cases except for toxic neuropathy.

Our patient sustained bullous keratopathy despite medical and surgical intervention, which could be attributed by late presentation of patient who seek for treatment 2 days after injury. Besides, the cornea edema found in cases of wasp sting generally ends with bullous keratopathy[9]. It has been noted that the cause of corneal edema in bee or wasp stings is acetylcholine in the venom. Nakatani *et al.* reported decreased endothelial cell density in patient's affected eye[10]. This finding indicated that the bee and wasp venom contained toxic substance to corneal endothelium. In our patient, Descemet-stripping automated endothelial keratoplasty has contributed a favourable visual outcome.

Early stinger removal is recommended to reduce the possible sequelae of bee sting toxicity for better visual outcome. We recommend a corneal incision along the injured plane to remove the whole length of stinger.

Conflict of interest statement

We declare that we have no conflict of interest.

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