

Ocular Surface Manifestations of Ophthalmia Nodosa from Caterpillar Setae

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Disclosure: The authors report no conflicts of interest or financial disclosures.

ABSTRACT

Objective: To report three consecutive cases of ophthalmia nodosa due to caterpillar hair (setae).

Methods: This is a brief report.

Results: Three cases of ocular surface injury with history of contact with caterpillar setae are reported. The first case is that of a child with right upper lid swelling, papillary conjunctivitis, and setae embedded in the upper palpebral conjunctiva causing multiple distinct linear abrasions on the cornea. The second patient was an adult male who had setae embedded in the corneal stroma, palpebral conjunctiva, and bulbar conjunctiva, resulting in corneal epithelial defect and a conjunctival granuloma. The last was an adult male who had a subconjunctival hemorrhage due to setae penetration. All were managed with setae removal, topical antibiotic and steroid eyedrops, and other symptomatic treatment strategies as needed.

Conclusion: Clinical features of ophthalmia nodosa vary depending on the site of setae penetration. Meticulous setae removal is key to successful management in addition to inflammation control and infection prophylaxis.

Keywords: Ophthalmia nodosa, caterpillar, setae, reactive conjunctivitis



Ophthalmia nodosa is an ocular inflammatory reaction secondary to exposure to foreign organic matter such as sharp vegetable matter or hairs (setae) of certain invertebrates such as caterpillars or spiders.¹ These foreign bodies can lodge in the conjunctiva or cornea, and with further manipulation, may migrate to deeper structures. Depending on the depth of tissue involvement, these penetrating foreign bodies may cause various inflammatory responses such as conjunctivitis, conjunctival nodules, keratitis, iris nodules, uveitis, focal cataract, vitritis, macular edema, and endophthalmitis in severe cases.² We report three cases of eye contact with caterpillar setae, describing the different clinical presentations and steps to treatment.

CASE PRESENTATION

Case 1

A 12-year-old female presented with 1-week foreign body sensation on the right eye after a caterpillar fell on her face. Gross examination showed right upper lid swelling, papillary conjunctivitis, and conjunctival injection and chemosis. Slit-lamp evaluation showed numerous fine caterpillar setae embedded in the upper palpebral conjunctiva and multiple linear abrasions with dye uptake on the temporal cornea (**Figure 1**). Findings posterior to the cornea were unremarkable.

Manual removal of setae was done and the patient was started on moxifloxacin 0.5% and loteprednol 0.5% eyedrops every 6 hours. One week later, there was improvement of the conjunctival injection but there was note of setae surfacing on the upper palpebral conjunctiva that was unseen during the initial consult. Topical medications were continued and manual removal of setae was done during two more follow-up sessions, leading to complete resolution of symptoms.

Case 2

A 52-year-old male with a history of caterpillar contact on his left eye came in due to redness and foreign body sensation. He was initially started on a

topical antibiotic-steroid combination eyedrop 3 times a day at a different clinic. Persistence of symptoms prompted the patient to seek a second opinion at our institution.

On examination, there were several setae lodged in the temporal third of the left upper and lower lids accompanied by localized papillary conjunctival inflammation. A gross epithelial defect was seen at the temporal cornea corresponding to the location of the lodged setae on the upper lid (**Figure 2A**). A seta was also embedded on the temporal limbal conjunctiva extending to the posterior corneal stroma. This was associated with a small conjunctival granuloma at the suspected entry point (**Figures 2B and 2C**). There was no anterior chamber reaction, and the rest of the intraocular structures were unremarkable.

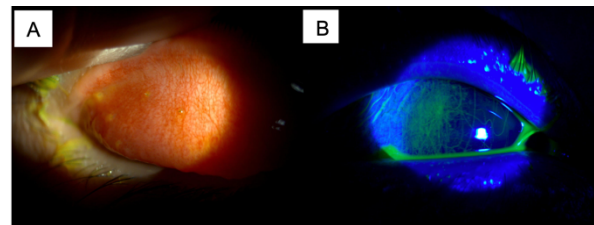


Figure 1. (A) Hyperemic palpebral conjunctiva with lodged fine setae seen upon eversion of the right upper eyelid. (B) Multiple linear corneal abrasions with dye uptake under cobalt blue light filter.

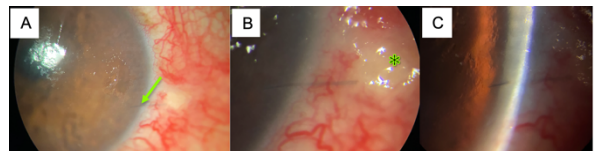


Figure 2. (A) Gross epithelial defect with irregular borders at the temporal midperipheral cornea adjacent to a lodged seta (arrow). (B) High magnification view of seta showing penetration from the temporal limbal conjunctiva to the cornea with adjacent conjunctival granuloma (asterisk). (C) Slit-beam view on high magnification showing penetration of the seta up to the posterior corneal stroma.

Manual removal of all accessible setae was done. Removal of the seta embedded in the limbal conjunctiva and cornea was attempted by careful dissection of the conjunctival tissue. However, the seta broke off prematurely upon retrieval, and only the proximal segment over the conjunctiva was removed. The distal segment remained embedded in the cornea with medial displacement within the posterior stroma. Topical levofloxacin 0.5% was prescribed, to be instilled every hour.

After 1 week, the corneal abrasion was fully healed. The corneal stroma and anterior chamber

remained quiet, but significant conjunctival inflammation remained. Topical levofloxacin 0.5% was replaced with a topical steroid-antibiotic combination eyedrop three times a day. After 2 weeks, there was marked improvement of the conjunctival inflammation and resolution of the granuloma. The seta fragment embedded in the cornea remained inert without inciting further inflammation (**Figure 3**).

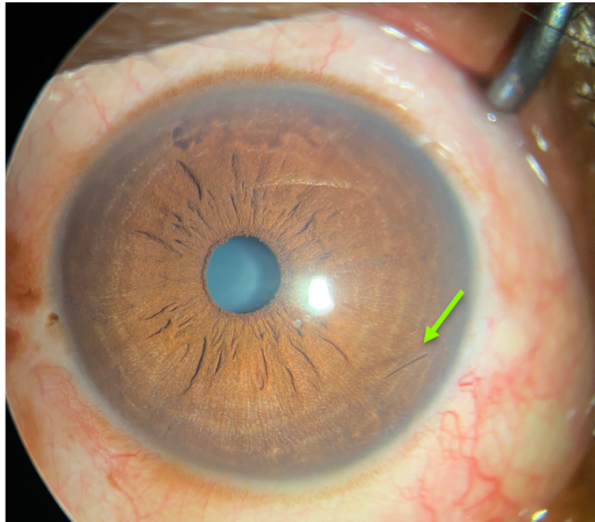


Figure 3. Two weeks post-treatment showing marked improvement of conjunctival inflammation. A segment of the seta remains embedded in the posterior corneal stroma with minimal medial migration (arrow).

Case 3

A 53-year-old hypertensive male experienced sudden onset redness with foreign body sensation in the right eye. A few hours prior to consult, he was cutting shrubs with caterpillars on the branches but did not recall a caterpillar landing on his eye.

Examination of the right eye showed an inferotemporal subconjunctival hemorrhage and a single seta embedded on the bulbar conjunctiva (**Figure 4**). Upon removal of the seta, there was immediate rebleeding at the puncture site which was controlled by applying pressure with a cotton-tipped applicator. The patient was advised to apply cold compress over the eye four times a day for the first 24 hours, then warm compress until the resolution of the hemorrhage. A topical steroid-antibiotic combination eyedrop was also given four times a day. Upon follow-up after 2 weeks, there were no

additional setae detected, and the subconjunctival hemorrhage was seen to be gradually resolving.

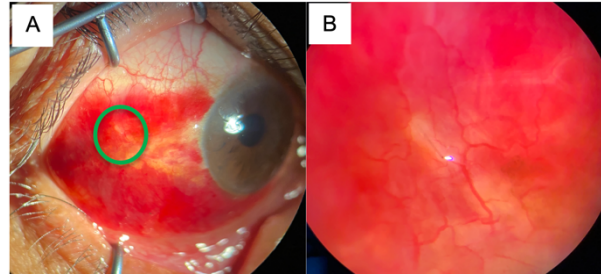


Figure 4. (A) Low magnification showing the extent of subconjunctival hemorrhage. A single seta can be seen on the bulbar conjunctiva (green circle). (B) High magnification view showing the embedded seta with surrounding hemorrhage.

DISCUSSION

While ophthalmia nodosa is a well-described ocular disease entity, the variations in symptomatology and extent of involvement may be a challenge to the general ophthalmologist. The Cadera classification (**Table 1**) provides a quick guide to management.³

Table 1. Classification of Ophthalmia nodosa proposed by Cadera et al.³

TYPE	CHARACTERISTICS	TREATMENT
1	An acute toxic reaction to hair (chemosis and inflammation)	Irrigation, followed by removal of the setae, including lid eversion, and the administration of topical antibiotics and steroids
2	Chronic mechanical keratoconjunctivitis caused by hair found in the bulbar or palpebral conjunctiva with foreign body sensation and corneal abrasions	
3	Formation of conjunctival granulomas due to subconjunctival or intracorneal setae	Surgical excision of the nodules under the conjunctiva to prevent migration to cornea and subsequently other intraocular structures
4	Iritis secondary to hair penetration of the anterior segment	Topical steroids for keratitis and anterior uveitis; removal of setae, iridectomy, and even lensectomy; Nd:YAG laser to disrupt hairs
5	Early or late vitreoretinal involvement due to penetration of the hair through the cornea, iris, and lens or via the transscleral route; vitritis, cystoid macular edema, papillitis, or endophthalmitis may occur	Oral, periocular, or intraocular steroids for control of inflammation (but other infections must be ruled out before ocular injections); Nd:YAG laser to disrupt hairs; vitrectomy for resistant cases

In this report, all cases were confined to the ocular surface and can be classified as Types 1-3 based on the Cadera classification. The subconjunctival hemorrhage observed in the third case is not described in the Cadera classification and we suggest that this finding should also be considered in setae-related injuries.

In all three cases, initiation of treatment and best efforts to remove all accessible setae, including meticulous checking of surfacing setae in succeeding clinic visits, resulted in significant improvements in inflammation. Complaints of persistent eye pain, redness or foreign body sensation, and/or fluorescein uptake should alert the clinician that there may be remaining setae lodged in the ocular surface tissues.

In conclusion, clinical features of ophthalmia nodosa may differ depending on the site of lodged setae in the eye. Treatment must include thorough examination for visible setae even on follow-up examinations. Prompt manual removal of setae, and initiation of appropriate symptomatic treatment with proper timing of steroid use, are both needed to decrease the risk of ocular surface damage, posterior segment migration of setae, and vision-threatening complications.

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