

THE ADVENTURE OF THE UPSTATE TRAVELER

A camper brings home an unintended souvenir from a camping trip.

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Attachment of a deer tick to the conjunctiva is a rare event, with only a few reports in the literature.¹⁻⁵ We report a unique case of tick penetration into the conjunctiva, specifically a black-legged deer tick (*Ixodes scapularis*).



CASE REPORT

Our patient was a white woman in her late 60s who presented with a 3-week history of a pigmented ocular lesion, blurry vision (20/25 OD, 20/25 OS) and occasional mild pain in the

right eye. She began to experience these symptoms after a sudden foreign body sensation in the right eye while camping in the Adirondack Mountains in upstate New York. She reported no other symptoms suggestive of systemic disease.

During slit-lamp examination, a foreign body suggestive of a tick was noted on the nasal conjunctiva of the right eye, 1.5 mm posterior to the limbus, with 2+ conjunctival injection and prominent episcleral vessels (Figure 1). Intraocular pressure was within normal limits in each eye.

MANAGEMENT

In preparation to remove the suspected tick, topical proparacaine was applied for anesthesia. The foreign body was extracted at the slit lamp using a 30-gauge needle and was sent to pathology for analysis.

The pathology report stated that our specimen was “consistent with the exoskeleton of an insect”—ie, a deer tick larva (Figure 2). Although formal staging of the tick (larval, nymph, adult) was not completed, visual

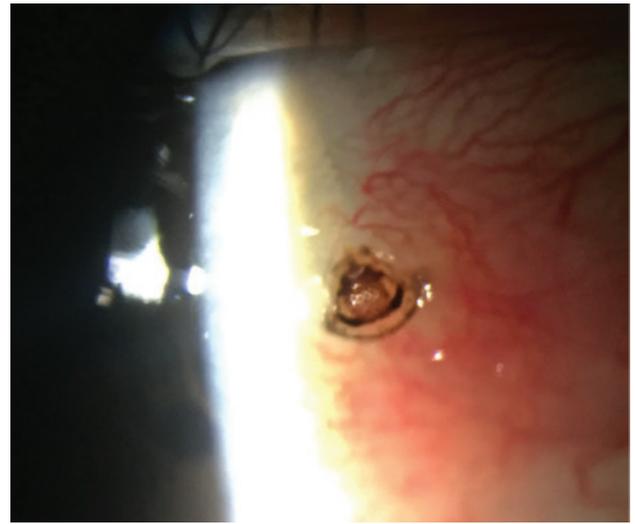


Figure 1. Slit-lamp view of the suspected *Ixodes scapularis* tick larva attached to the nasal conjunctiva of the patient's right eye, 1.5 mm posterior to the limbus, with 2+ conjunctival injection and prominent episcleral vessels.

appreciation of the tick's shape, size, landmark characteristics, and pigmentation pattern, as well as the geographic location of the specimen, demonstrated that it was probably a deer tick in the larval stage.

For management, our patient was instructed to use polymyxin-trimethoprim eye drops three times daily and loteprednol (Lotemax, Bausch + Lomb) drops twice daily in the right eye for 3 days. Additionally, she was started on oral doxycycline (100 mg) for 14 days as prophylaxis against Lyme disease, a tick-borne illness endemic to the northeastern United States.

The Infectious Diseases Society of America (IDSA) criteria for prophylaxis with doxycycline for the prevention of Lyme disease requires all of the following:⁶



Figure 2. *Ixodes scapularis* (deer tick) larva for the purpose of comparison. These ticks are less than 1 mm in size. Note the six-legged characteristic of the larva.

- an attached tick identified as an adult or nymphal *I. scapularis*;
- tick estimated to have been attached for 36 hours or more;
- prophylaxis started within 72 hours of tick removal;
- local rate of infection of ticks with *Borrelia burgdorferi* of 20% or greater; and
- no doxycycline contraindication in the patient.

Although this patient did not definitively meet the first criterion of the IDSA guidelines, prophylactic therapy was started for a few reasons. The extracted tick was not confirmed but was speculated to be of larval stage based on visual appreciation and identification of landmark characteristics (ie, six legs). Thus, we could not exclude the possibility that the tick could have been in the nymphal stage or beyond. Based on the low side effect profile of doxycycline and a detailed discussion with the patient about the low likelihood of Lyme disease transmission, she opted for the prophylactic treatment. Given the use of prophylactic treatment and our patient's low overall risk, no blood was drawn for Lyme serology. When the patient returned for follow-up, her ocular symptoms had resolved, and she had not developed any systemic symptoms of Lyme disease.

CLINICAL CONSIDERATIONS

There are six reports in the literature of tick adherence to the conjunctiva. Four of the six reports were secondary to *Amblyomma americanum*, one was secondary to *Otobius megninii*, and in one the tick was of unknown

species. As with our patient, the locale of each of these reports corresponded to areas where each of the relevant tick species is commonly found; for example, the four reports of *A. americanum* occurred in Arkansas, Texas, and Alabama. Our patient was camping in the Adirondack Mountains, a portion of the northeastern United States where *I. scapularis* is more prevalent. Although there are a limited number of reported cases from which to generalize, there appears to be no predilection for patient sex, patient age, or ocular location of tick attachment.

In any case of suspected tick penetration to the ocular surface, we recommend immediate ophthalmologic consultation and prompt removal via the method described above in order to minimize a localized inflammatory reaction and the potential for infectious transmission. Furthermore, the IDSA guidelines should be consulted to evaluate whether prophylaxis is needed for any tick-borne diseases endemic to the region where the patient was affected. ■

1. Jensen LA, Snow RL, Clifford CM. Spinöse ear tick, *Otobius megninii* attached to the conjunctiva of a child's eye. *J Parasitol.* 1982;68(4):528.
2. Bode D, Speicher P, Harlan H. A seed tick infestation of the conjunctiva: *Amblyomma americanum* larva. *Ann Ophthalmol.* 1987;19(2):63-64.
3. Meades KV, Lam G. Larva tick bite of the conjunctiva. *Aust NZ J Ophthalmol.* 1991;19(4):365-366.
4. Love MC, Platt L, Westfall CT. Lone-star tick bite of the conjunctiva. *Arch Ophthalmol.* 2001;119(12):1854-1855.
5. Willen C, Mullen GR, Yee J, Read RW. Conjunctival attachment of a tick: clinicopathologic report of a case. *J Emerg Med.* 2011;40(3):e41-44.
6. Wormser GP, Dattwyler RJ, Shapiro ED, et al. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis.* 2006;43(9):1089-1134.

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