CASE REPORT: OPHTHALMOMYIASIS EXTERNA IN DALLAS COUNTY, TEXAS

ELLEN SIGAUKE, WALTER E. BEEBE, RITA M. GANDER, DOMINICK CAVUOTI, AND PAUL M. SOUTHERN

Departments of Pathology and Internal Medicine, University of Texas Southwestern Medical Center, Dallas, Texas; Cornea Associates of Texas, Dallas, Texas

Abstract. Ophthalmomyiasis externa is an uncommon condition in North America. If not recognized and managed accordingly, it can be complicated by the potentially fatal condition ophthalmomyiasis interna. Ophthalmomyiasis externa is mainly caused by the sheep bot fly *Oestrus ovis*; thus, it is more common in farming communities. We report a case of ophthalmomyiasis externa in a young woman from Dallas County, Texas, who had no known history of contact with farm animals.

INTRODUCTION

Ophthalmomyiasis externa results from infestation of the conjunctiva by the larval form or maggot of flies in the order Diptera. Other forms of ophthalmomyiasis include ophthalmomyiasis interna and orbital ophthalmomyiasis, depending on the site of infestation.1,2 Ophthalmomyiasis interna results when the larvae penetrate the globe, and can be visualized in the subretinal space and in the vitreous cavity. Orbital ophthalmomyiasis, the least common of the three conditions, is due to invasion of the orbit.1

*Oestrus ovis*, the nasal bot fly, is the most common cause of conjunctival ophthalmomyiasis in North America3 and the term ophthalmoestriasis has been proposed.4 This bot fly is a common parasite in the nasal and paranasal cavities of goats and sheep, thus, the name, the sheep nasal bot fly. It is common in sheep farming areas, especially in the Mediterranean countries, southern Africa, and Central America. The organism is rare in the United States, with few reported cases to date.5 Most cases have been reported from Santa Catalina Island, California, where there is a large indigenous wild goat population.5 A more dangerous form of conjunctival ophthalmomyiasis is due to the Russian bot fly, *Rhinoestrus purpureus*, which is found in the nasal passages of equines in southern Europe, Asia Minor, and Africa.4 The cattle bot fly, *Hypoderma bovis*, is frequently associated with ophthalmomyiasis interna.6 We report a case of ophthalmomyiasis externa in a young woman in Dallas County, Texas.

CASE HISTORY

A 16-year-old woman student from Garland, Texas, with an unremarkable medical history, presented to the Cornea Associates of Texas on May 11, 2000 reporting that worms came out of both her eyes as she rubbed her conjunctiva. She had one of the specimens with her. Associated symptoms included continuous bilateral eye pain with mucoid ocular discharge over the five-day period before presentation. She wore contact lenses. There was no history of previous ocular surgeries, and she was not taking any ocular medications. She was in good general health. There was no history of recent travel, and no history of exposure to animals other than household pets (specifically, no exposure to sheep, goats, bovines, or other livestock). Her family history was significant for diabetes mellitus, cancer, hypertension and arthritis.

On examination she had a visual acuity of 20/20 with spectacle correction. There was significant conjunctival follicular reaction in both eyes. No other parasites were noted within the anterior segments. The specimen was examined at the Dallas County Hospital District Department of Microbiology. A 4.0 × 1.0 mm tan object consistent with fly larva was identified. A more definitive identification was not possible because the larva was dead and had not been properly preserved. It was suspected that the patient had eggs on her hands that were transmitted to the conjunctival sac.

No medications were prescribed and the patient was discharged with instructions to return for re-evaluation at a later date. The Infectious Disease service was consulted and concurred with the recommendations.

The patient did not return for follow-up examination. A telephone call to her home confirmed that she remained asymptomatic several weeks later.

DISCUSSION

Human ophthalmomyiasis is rare in North America; however, several cases have been reported. Hennessy and others reported a case of a 16-year-old woman who had been camping on Santa Catalina Island, California.6 She had been swimming in the Pacific Ocean and hiked through the woods, but denied being struck by a foreign object. Reingold and others reported another case of a woman who had an acute onset of symptoms while vacationing on Santa Catalina Island, but she could not recall any stinging sensations or seeing any insects nearby.5 Heyde and others reported a similar case of a 28-year-old man who had been sight-seeing on Santa Catalina Island.5 The patient actually noted a stinging sensation in both his eyes after a dive. Human ophthalmomyiasis externa has also been reported in an otherwise healthy, one-month-old infant from urban Atlanta.7 Bosniak and others reported a case of a 63-year-old diabetic man from New York with ophthalmomyiasis in an eyelid reconstruction.8

Yoshimoto and Goff reported a case in a 63-year-old man in Hawaii who was infected while working on his car.9 They also indicated that there have been other cases in Hawaii. Other genera of fly larvae have also been reported to be associated with ophthalmomyiasis. Chodosh and others reported a case of nosocomial conjunctival myiasis in a debilitated nursing home resident in Texas.10 The larvae were identified as *Cochliomyia macellaria*. Chodosh and Clarridge later reviewed ophthalmomyiasis, and reported other causes included *Cochliomyia hominivorax*, *Chrysomyia bezziana*, *Wohlfartia magnifica*, *Dermatobia hominis*, *Oedemagena tarandi*, and *Hypoderma* spp.11 Many of these infections were in individuals with underlying illnesses, and were frequently the cause of ophthalmomyiasis interna. Emborskey and Faden.

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recently reported a case of periorbital swelling in a four-year-old boy due to ophthalmomyiasis caused by *D. hominis*. In this instance, the larva was removed surgically from the upper eyelid. Another recent case report from India, involving *O. ovis*, was somewhat similar to our case in that it was in a 12-year-old boy with conjunctival larvae. Although his father was a gardener, he had no history of animal contact.

First instar larvae, also known as sheep bot, are deposited by the adult female *O. ovis* into the external nares of goats and sheep and work their way up into the nasal and frontal sinuses where maturation takes place. The mature larvae drop to the ground and pupate. After three to six weeks, adult flies emerge from the pupae and their life-span may be up to a month. The adult fly is approximately 12 mm in length and mainly blackish-brown. Patients with ophthalmomyiasis externa due to *O. ovis* typically present with a history of close contact with sheep or goats in early summer to fall. The symptoms of conjunctival ophthalmomyiasis are similar to those of acute catarrh conjunctivitis. There may be a history of a foreign object or an insect striking the eye, a few hours before the onset of eye pain and inflammation. The female flies are supposedly capable of ejecting a jet of larvae while in close proximity to the eye. The patient may present with burning, itching, mobile foreign body sensation, photophobia, watery discharge, and eyelid cellulites. A conjunctival pseudomembrane may be present in some cases. Follicular conjunctivitis and punctate keratopathy are characteristic. The larva may die in the host giving rise to a permanent nodule, which macroscopically resembles a sty.

Visualization of the organism is aided by the slit-lamp examination, although the organism usually avoids the beam. The larvae are translucent and small (0.8–1.0 mm), making them difficult to detect. Larval identification is aided by the dark mouth claws and the active vermiform movements of its body against the congested and edematous conjunctiva. Double eyelid eversion may aid detection of the larvae in the conjunctival fornix. As many as 50 organisms have been removed from one eye. Heyde and others reported 50 organisms in the right eye and approximately 30 organisms in the left eye of a single patient. Treatment of the condition is by removal of the larvae. Paraffin oil can be used to stop the oxygen supply, thus aiding removal of the larvae. In addition, a topical anesthetic can be used to paralyze the larvae, thus making their removal by forceps easier. Generous amounts of Neosporin® (Warner Lambert, Morris Plains, NJ) (neomycin, bacitracin, and polymyxin B) ointment have been used to facilitate suffocation of the organism. Topical corticosteroids and antibiotics can be used to relieve the inflammation and prevent bacterial contamination. Follow-up examination by an ophthalmologist is recommended to avoid the possible complication of ophthalmomyiasis interna.

In conclusion, although ophthalmomyiasis externa is an uncommon condition in North America, early diagnosis and management is important in preventing complications.

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Authors’ addresses: Ellen Sigauke, Rita M. Gander, Dominick Cavuoti, and Paul M. Southern, Department of Pathology, University of Texas Southwestern Medical Center, 5323 Harry Hines Boulevard, Dallas, TX 75390-9073. Walter E. Beebe, Cornea Associates of Texas, 7150 Greenville Avenue, Dallas, TX 75231.

Reprint requests: Paul M. Southern, Department of Pathology, University of Texas Southwestern Medical Center, 5323 Harry Hines Boulevard, Dallas, TX 75390-9073, Telephone: 214-648-3587, Fax: 214-590-8037, E-mail: paul.southern@utsouthwestern.edu

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