Pain and Bloody Ear Discharge in a Returning Traveler

Sylvia M. LaCourse,* Raquel M. Martinez, David H. Spach, and Ferric C. Fang

Department of Medicine, Division of Allergy and Infectious Diseases, University of Washington, Seattle, Washington; Department of Laboratory Medicine, Geisinger Health System, Danville, Pennsylvania; Department of Laboratory Medicine, University of Washington, Seattle, Washington

Abstract. *Cochliomyia hominivorax*, the New World screwworm, was a serious livestock pest in the southern United States until the 1960s, when it was successfully eradicated by the release of sterile male flies. It remains endemic in parts of the Caribbean and South America, and there is concern that climate change may extend its geographic distribution. *Cochliomyia hominivorax* is voracious and can cause extensive damage to soft tissue and bone. We describe the case of a 26-year-old traveler who presented with otalgia and bloody otorrhea after returning from a vacation in the Dominican Republic, where exposure to screwworm flies most likely occurred during a nap on the beach. The causative agent was recognized by its characteristic larval anatomy, which includes pigmented dorsal tracheal trunks and posterior spiracles with an open peritreme.

A 26-year-old female presented with a 2-day history of otalgia and bloody otorrhea after returning from a week of vacation in the Dominican Republic, where she stayed in a beachside resort with screened windows, swam in the ocean, hiked near an estuary, and sunbathed on the beach. She admitted to falling asleep on the beach one evening after drinking alcohol. The next day she had right ear discomfort with the sensation of movement, and removed a fly from her ear. One day later during the flight home, she had acute onset of ear pain, which she initially attributed to pressure changes associated with her flight, until she began noting discharge from the ear. The discharge was initially clear but became bloody within 1–2 hours. She sought medical care the next day, when an otoscopic examination revealed multiple motile larvae (Figure 1, Panel A). She was immediately referred to an otolaryngologist who performed excision and debridement of her external auditory canal with atticotomy.

Intraoperative findings revealed soft tissue larval infiltration extending to the temporal bone and tympanic membrane perforation without middle ear involvement. The patient tolerated the debridement well and was prescribed amoxicillin-clavulanic acid for potential secondary soft-tissue infection. She subsequently underwent tympanoplasty with a split-thickness skin graft. The removed larvae were preliminarily identified as *Cochliomyia hominivorax* by the University of Washington Microbiology Laboratory on the basis of characteristic anatomic findings. Definitive identification was confirmed by the U.S. Department of Agriculture Screwworm Research Unit.

Cochliomyia hominivorax (“human eater”), the New World screwworm, has smooth larvae with pigmented dorsal tracheal trunks (white open arrow) and posterior spiracles with an open peritreme (gray closed arrow, and inset) (Figure 1, Panel B).¹ The larvae feed on the living tissue of warm-blooded mammals using sharp hook-like mandibles (Supplemental Video). Spines found in concentric rings along the larvae resemble a screw and aid in anchoring the larvae within tissue, hence the name “screwworm.”² A female adult can lay hundreds of eggs at one time, often within existing open wounds.³ The voracious larvae emerge within 24 hours and can cause extensive soft

tissue damage, and in some cases, destruction of bone. After 5–7 days the pupae mature and attempt to leave the wound to eventually burrow into the ground to pupate.² Adult flies can live for 2–3 weeks. Female flies are attracted to the scent of normal secretions of the orifices of mammals, with case reports describing infestation of the ears, eyes, nose, mouth, vagina, and rectum,⁴ and are able to fly great distances (~50 km/week) to find a suitable host in which to deposit their eggs.² The scent of tissue infested with *C. hominivorax* can attract additional adult female flies that deposit their eggs within the same site. Individuals who are immobile, developmentally delayed, mentally ill, or alcoholic are at a higher risk of infestation.³ Orbital myiasis can be particularly devastating, requiring extensive debridement and sometimes enucleation.⁴ Several case reports have described secondary myiasis of ulcerative cutaneous malignancies.⁵ Auricular myiasis, as observed in our patient, is extremely rare and primarily occurs in children.³ Treatment of New World screwworm infestation consists of debridement, antibiotics if evidence of secondary infection is present, and adjunctive ivermectin in severe cases.⁴

Cochliomyia hominivorax was formerly endemic in the southern United States where it was responsible for a serious economic burden caused by livestock destruction, until the 1960s when it became the first pest to be successfully eradicated by the release of sterile male flies.⁶ The New World screwworm remains endemic in parts of the Caribbean and South America, and there is concern that climate change may extend its geographic distribution.⁷ Since the New World screwworm has been eradicated from the United States for decades, clinicians may be unaware of this potentially devastating infestation resulting from foreign travel to endemic areas. As a result of the risk for significant tissue destruction, particularly if diagnosis is delayed, it is important for clinicians to be able to promptly recognize and appropriately treat this form of myiasis.

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*Address correspondence to Sylvia M. LaCourse, Senior Research Fellow, Division of Allergy and Infectious Diseases, University of Washington, 1959 NE Pacific Street, Box 356423, Seattle, WA 98195. E-mail: sylvial2@uw.edu

FIGURE 1. **Panel A:** Excised tissue displaying multiple motile larvae that were removed from the external auditory canal of a returning traveler vacationing in the Dominican Republic with auricular myiasis. **Panel B:** The characteristic pigmented dorsal tracheal trunks (white open arrow) and posterior spiracles with an open peritreme (gray closed arrow and inset) of *Cochliomyia hominivorax*.

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Authors' addresses: Sylvia M. LaCourse and David H. Spach, University of Washington, Department of Medicine, Division of Allergy and Infectious Diseases, Seattle, WA, E-mails: sylvial2@uw.edu and spach@u.washington.edu. Raquel M. Martinez, Geisinger Health System, Department of Laboratory Medicine, Philadelphia, PA, E-mail: rmmartinez@geisinger.edu. Ferric C. Fang, University of Washington, Department of Medicine, Division of Allergy and Infectious Diseases, Seattle, WA, and Harborview Medical Center, Department of Laboratory Medicine, Seattle, WA, E-mail: fcfang@u.washington.edu.

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