Nodular Skin Lesion in a Returning Traveler

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As tropical countries become common travelers’ destination, more and more returning travelers are expected to present with cutaneous lesion secondary to myiasis. The skin lesion starts as a small red papule and gradually enlarges to become a furuncle. Familiarity with the characteristic clinical presentation and proper management would avoid an unnecessary diagnostic workup and therapeutic intervention, including surgery and the use of antibiotics.

A 45-year-old marine biologist presented to our travel clinic complaining of two painful skin swellings a week after returning from a hiking trip in the rain forest of Belize. Except for the dull pain and intense itching around the swelling, the patient was feeling well. He reported no fever. He also had multiple insect bite marks on his back, neck, and extremities.

On examination, two furuncles, each 2 cm in size, were noticed in his right shoulder and scalp. There were no visible overlying skin abrasions, but the skin was inflamed and red around the swelling. The lesion was tender on palpation, and there was a small, central dark point at the shoulder lesion. Using K-Y Jelly (lubricant), the punctum was occluded and soon a larva started to emerge. Holding and pulling the tip with a forceps failed to extract the larva. By making a small incision across the punctum and applying a gentle pulling pressure, the complete larva was extracted (Figure 1A). Two days later the second larva was extracted using the same technique (Figure 1B).

Discussion

Myiasis is the invasion of a human or other domesticated vertebrate animal by fly larvae of the order Diptera.1,2 Despite the presence of many species, the two common flies that affect returning travelers from the tropics are Dermatobia hominis (the human botfly) and Cordylobia anthropophaga (the tumbu fly).3 The larva stage of both species can only survive in the tissue of vertebrate animals. D. hominis is endemic in the humid trop-
ical forests and wooded lowlands of Central and South America. *C. anthropophaga* is endemic to sub-Saharan Africa. The female *D. hominis* fly seeks a biting arthropod and attaches the fertilized eggs to the abdomen of the carrier insect to use it as a mechanical vector. Once the insect lands on a vertebrate, the eggs are released; they then hatch into first-stage larvae. The larvae burrow into the subcutaneous tissue and mature to flask-shaped second-stage larvae. Subsequently, they undergo one more molting into fusiform-shaped third-stage larvae. The larvae have distinctive posteriorly directed black hooklets around white abdominal segments, which help to anchor the larvae within the tissue. The larvae complete their development within 4 to 14 weeks, at which time they emerge from the skin, fall to the ground, and complete their life cycle.

In case of *C. anthropophaga*, the female fly lays its egg in soil or drying clothes. Within 1 to 3 days, the eggs hatch, and upon direct contact with humans, the larvae burrow into the skin. Once in the tissue, the life cycle is similar to that of *D. hominis*.

A botfly larva produces a painful cutaneous swelling that looks like a furuncle. Pain and a sensation of movement might be felt. Soon an opening becomes apparent, and intermittently the tail of the larva extrudes from this opening. Occasionally, because of secondary bacterial infection, there is purulent discharge, suggesting bacterial furunculosis. The clinical presentation and appearance of the lesion of *D. hominis* and *C. anthropophaga* appear similar except that *D. hominis* favors the scalp, face, and extremities, whereas *C. anthropophaga* is more likely to affect the trunk, buttocks, and thighs. Rarely, larvae migrate to other body sites. Case reports of involvement of the eye, urethra, penis, vagina, bladder, colon, upper respiratory tract, oral cavity, and brain have been documented.

The differential diagnosis of myiasis should include cellulitis, a staphylococcal carbuncle or furunculosis, leishmaniasis, a sebaceous cyst, and an embedded foreign body. Clinical recognition of myiasis in a returning traveler would avoid an unnecessary diagnostic workup and therapeutic intervention, including surgery and the use of antibiotics.

Removal of the larva by occlusion of the opening using different ointments is commonly attempted first. Petrolatum, fingernail polish, makeup cream, adhesive tape, and pork fat have all been reported to work. Occlusion of the punctum asphyxiates the larva, which then protrudes far enough to be grasped by a forceps. In one case report, squeezing the lesion was enough to remove multiple larvae. Usually, occlusion and extraction takes hours, and it is rarely successful in case of *D. hominis*. This makes surgical evacuation of the larva a necessary step.

Another method involves the injection of lidocaine hydrochloride under the nodule. This paralyzes the larva and makes removal much easier. Additionally, the pressure of the injection is sufficient to push the larva out. Topical administration of 1% ivermectin in propylene glycol for 2 hours was recently reported to be effective in removing human myiasis by *Cochliomyia hominivorax*. Systemic ivermectin has been used in the treatment of *D. hominis* myiasis in animals. In humans systemic ivermectin might be used when there are many lesions or when local occlusion treatment cannot be done easily, as is the case in opthalmomiasis. In our patient removing the larva by obliterating the opening was not successful in either lesion, and incision and widening of the opening had to be done in addition to the application of the K–Y Jelly. This was necessary to facilitate extraction of the widened anterior end of the larva as opposed to the narrower protruding posterior end. Additionally, the parallel, concentric rows of spine in its body anchor the proximal end of the larva beneath the skin, making it difficult to extract by simple pressure alone (see Figure 1).

The application of insect repellents containing diethyltoluamide and permethrin and the use of mosquito netting decreases the risk of infestation. In the case of *C. anthropophaga*, ironing clothes before wearing them is an effective method of destroying the eggs. Additional general precautions include the wearing of long-sleeved clothing and avoiding sleeping outdoors.

As tropical countries are becoming common destinations for travelers, more and more returnees are expected to present with cutaneous lesions secondary to myiasis. Physicians should be familiar with the characteristic clinical presentation, diagnosis, and proper management to avoid delayed diagnosis and the unnecessary use of antibiotics.

**Declaration of Interests**

The authors have no financial or other conflicts of interest to disclose.

**References**


