Mucocutaneous manifestations of helminth infections

Nematodes

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Learning objectives
After completing this learning activity, participants should be able to describe the cutaneous manifestations of infections by nematodes and identify appropriate therapy.

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In the 21st century, despite increased globalization through international travel for business, medical volunteerism, pleasure, and immigration/refugees into the United States, there is little published in the dermatology literature regarding the cutaneous manifestations of helminth infections. Approximately 17% of travelers seek medical care because of cutaneous disorders, many related to infectious etiologies. This review will focus on the cutaneous manifestations of helminth infections and is divided into 2 parts: part I focuses on nematode infections, and part II focuses on trematode and cestode infections. This review highlights the clinical manifestations, transmission, diagnosis, and treatment of helminth infections. Nematodes are roundworms that cause diseases with cutaneous manifestations, such as cutaneous larval migrans, onchocerciasis, filariasis, gnathostomiasis, loiasis, dracunculiasis, strongyloidiasis, ascariasis, streptocerciasis, dirofilariasis, and trichinosis. Tremadotes, also known as flukes, cause schistosomiasis, paragonimiasis, and fascioliasis. Cestodes (tapeworms) are flat, hermaphroditic parasites that cause diseases such as sparganosis, cysticercosis, and echinococcus. (J Am Acad Dermatol 2015;73:929-44.)

Key words: helminth; nematodes; parasite; travel; tropical.

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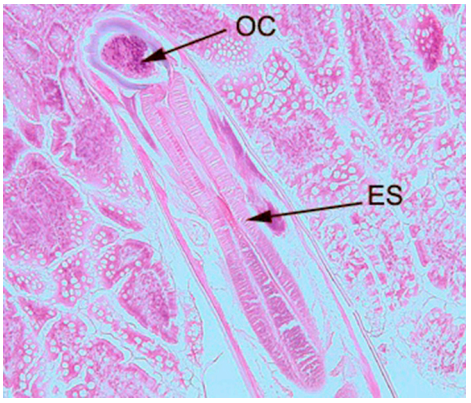

Fig 1. Longitudinal section of an adult hookworm in a bowel biopsy specimen. Note the oral cavity (OC) and esophagus (ES). Courtesy of the Centers for Disease Control and Prevention. (Hematoxylin–eosin stain.)

NEMATODE INFECTIONS

Key points

- **Nematode infections are common parasitoses, with millions of people infected**
- **Prevalence varies, but increases with poverty and tropical climate**
- **Control of nematode infection is based on drug treatment, improved sanitation, and education**

Nematodes are commonly parasitic to humans, with >60 species known to infect man. Nematodes are elongated with symmetrical bodies that contain an intestinal system and a large body cavity. Dermatologists should be familiar with these infections because of their increased presence in the United States, increased travel, and economic globalization.[1-7] In this continuing medical education article, we review the nematode infections with important mucocutaneous manifestations.

CUTANEOUS LARVAL MIGRANS

Key points

- **Cutaneous larval migrans presents with an erythematous, pruritic eruption and is caused by percutaneous penetration of animal hookworms**
- **Infection is caused by filariform larvae burrowing through the skin; common places of infection are sand or soil contaminated with animal feces**
- **The disease is usually self-limited, but patients typically will seek medical treatment**
- **Ivermectin can be used to shorten the clinical course of disease and prevent superinfection.**

Fig 2. Cutaneous larva migrans on the left foot. Note the elevated, serpiginous track of the hookworm. Courtesy of the Centers for Disease Control and Prevention.

Fig 3. Disseminated cutaneous larva migrans.

Cutaneous larval migrans (CLM) usually affects tourists and inhabitants of tropical and subtropical climates, such as the southeastern United States, South America, Southeast Asia, and Africa. CLM is caused by larval migration of animal hookworms, most commonly *Ancylostoma braziliense, Ancylostoma ceylanicum*, and *Ancylostoma caninum*.

Life cycle

The life cycle begins as larvae attach to the skin of their definitive animal host (usually nondomesticated cats or dogs), eventually arriving to the pulmonary system. The larvae are subsequently swallowed, entering the gastrointestinal tract. Adult larvae (Fig 1) then shed eggs that are eliminated in