

Cutaneous Larva Migrans With Parts of the Larva in the Epidermis

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*Creeping eruption is usually caused by hookworms, most commonly *Ancylostoma braziliensis* and *Ancylostoma caninum*. Because lesions of cutaneous larva migrans have a typical clinical appearance, they are rarely biopsied. Specimens usually show spongiotic dermatitis with spongiotic vesicles containing neutrophils and eosinophils and a mixed-cell dermal infiltrate with numerous eosinophils. We report a case with parts of the larva migrans in the epidermis on histologic examination.*

Cutaneous larva migrans, or creeping eruption, is a dermatitis in which parasites are moving within the spinous layer of the epidermis. Clinically, there are serpiginous lesions consisting of urticarial papules and erythematous plaques that are extensively pruritic.^{1,2} Diagnosis is usually made without difficulty based on the typical clinical appearance. At the same time, recognition may be hampered because lesions may be altered by secondary changes. Microscopic examination is often of limited value because the larvae are usually not found. We describe a case, however, in which parts of the larva migrans are seen in the upper portion of the epidermis in histologic sections.

Case Report

A 39-year-old white man presented with tender blisters first noted on both plantar surfaces. The patient had returned from a 2-week vacation in the Caribbean where he recalled walking barefoot on the beach. During his vacation, the patient discovered the initial lesion on his right foot. Because of the intense itching and pain associated with the lesion, the patient sought medical attention while



Figure 1. A tense serpiginous blister with a slightly erythematous base on the plantar surface between the toes.

still on vacation. According to the patient, the evaluating physician considered a viral or bacterial infection and subsequently placed him on acyclovir 400 mg 3 times a day for 5 days, and amoxicillin 250 mg 4 times a day for 7 days. In addition, topical cortisone (desonide) was used to treat the itching. Despite therapy, new lesions developed on the right upper back and right wrist. Upon return home to New York, the patient presented to our office for evaluation. Physical examination revealed tense serpiginous linear bullae on the plantar surface bilaterally overlying the metatarsal bones, as well as on the great toe on one foot (Figure 1). The blisters were tender, very pruritic, and firm. The base of each blister was slightly erythematous. Similar blisters were present on the right wrist and right upper back. The patient denied any systemic symptoms such as myalgia, arthralgia, malaise, anorexia, nausea, vomiting, diarrhea, dyspnea, or palpitations.

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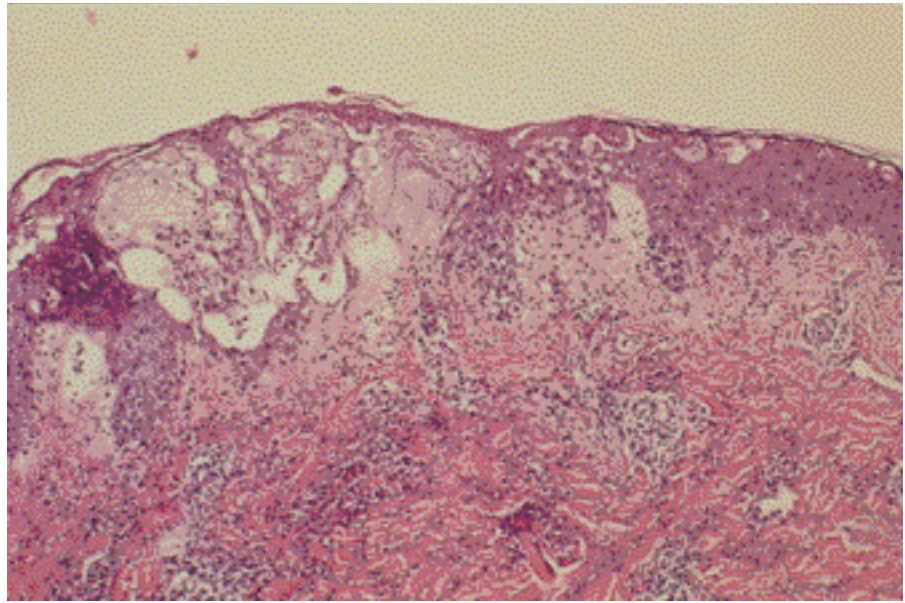


Figure 2. A dense superficial and deep perivascular and interstitial mixed infiltrate containing numerous eosinophils. Marked spongiosis and spongiotic vesicles containing serum and neutrophils are seen in the epidermis (H&E, original magnification $\times 10$).

Results of 2 biopsy specimens from lesions on the patient's back showed a dense perivascular and interstitial mixed-cell infiltrate of lymphocytes. In addition, there were numerous eosinophils in the superficial and deep reticular dermis. Spongiosis and spongiotic vesicles were seen in the epidermis (Figure 2). Rounded structures with a pink cuticle at the periphery and purple parts in the center, representing the intestine of the larva migrans, were focally present in the spinous layer of the epidermis (Figure 3). The patient was referred to an infectious disease specialist and treated with oral antiparasitic medication.

Comment

Cutaneous larva migrans is most commonly encountered in the tropics and subtropics, and is especially prevalent in the southeastern United States.¹ Cutaneous larva migrans, also known as creeping eruption, ground itch, plumber's itch, and sand worms, is the dermatitis caused by filariform larvae of zoonotic hookworms. In contrast to human hookworms, they complete their life cycle in animals and use humans as incidental dead-end hosts.^{1,3-5}

The most common cutaneous hookworms are the cat and dog hookworms, *Ancylostoma braziliensis* and *Ancylostoma caninum*, respectively, which live in the intestines of cats and dogs.⁶ The hookworms' eggs are passed with stools onto sandy warm soil, which serves as a rich incubator. The eggs feed on soil bacteria and, 24 hours later, mature into noninfectious rhabdoid larvae. After one week, they mature into infectious filariform larvae.^{1,4} The larvae

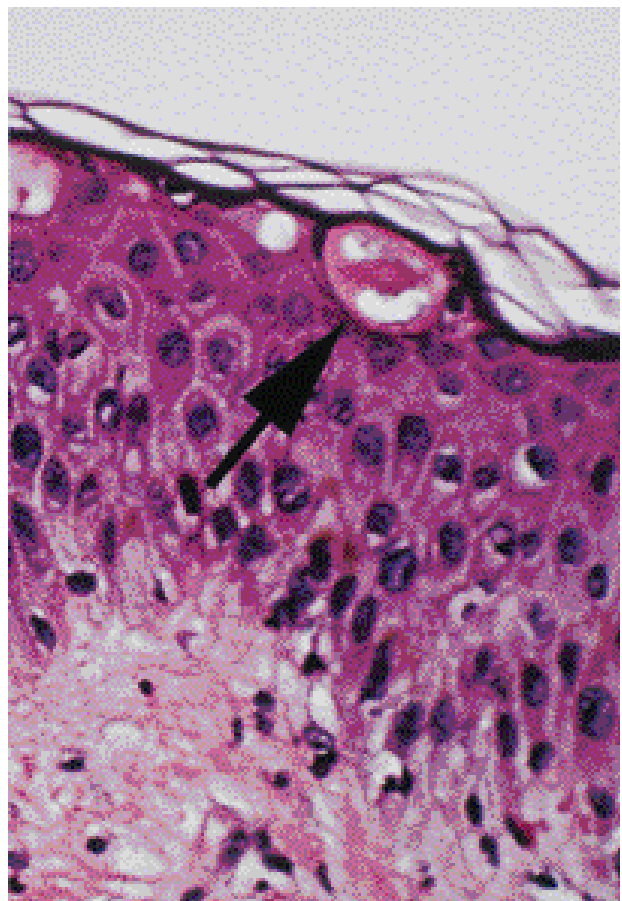


Figure 3. Rounded parts of the cutaneous larva migrans in transverse sections with pink cuticle at the periphery are present in the upper layers of the epidermis, immediately beneath the granular cell layer (H&E, original magnification $\times 40$).

then penetrate intact human skin that comes in contact with the infected soil. Initially, the patient feels a tingling or prickling sensation. Several hours later, a reddish-brown pruritic papule develops. The erythematous site is usually located 3 to 4 cm away from the penetration site.⁷ While in the epidermis, these organisms are generally unable to migrate beyond the basement membrane and penetrate the dermis. They travel along the epidermis, creating the characteristic serpiginous lesions. Finally, the larvae die and are resorbed. Thus, larva migrans is self-limiting in most cases.

Diagnosis is usually made from the patient's history and the characteristic clinical appearance of the lesions; hence, biopsy specimens are often not taken. Histologically, most specimens do not contain larvae and only reveal an infiltration of lymphocytes and eosinophils in the dermis.¹ There are spongiosis and spongiotic vesicles filled with eosinophils and neutrophils in the epidermis.² On rare occasions, the actual larva can be seen, usually in cross sections. They present as rounded bodies with an outer pink cuticle and central purplish structures that represent the intestine. Identification of the species of the parasite is not possible in tissue sections.^{1,5}

Cutaneous larva migrans can be treated with cryotherapy; topical application of thiabendazole; and systemic drugs such as thiabendazole, albendazole, and ivermectin.⁸ A recent study conducted by Bouchaud et al⁹ showed that therapy with iver-

mectin appeared to be effective (77% cure rate for a single dose and 96% cure rate when additional doses were needed).

REFERENCES

1. Meyers WM, Neafie RC, Marty AM, et al. *Creeping Eruption: Pathology of Infectious Diseases, Helminthiases*. Vol 1. Washington, DC: Armed Forces Institute of Pathology; 2000:367.
2. Van Gassel MW, Van de Sandt M. Serpiginous plaques on the leg. *Arch Dermatol*. 2000;136:1559-1564.
3. Albanese G, Di Cintio R, Beneggi M, et al. Larva migrans in Italy. *Int J Dermatol*. 1995;34:464-465.
4. Mattone-Volpe F. Cutaneous larva migrans infection in the pediatric foot: a review and two case reports. *J Am Podiatr Med Assoc*. 1998;88:228-231.
5. Little MD, Halsey NA, Cline BL, et al. Ancylostoma larva in a muscle fiber of man following cutaneous larva migrans. *Am J Trop Med Hyg*. 1983;32:1285-1288.
6. Hotez PJ. Hookworm disease in children. *Pediatr Infect Dis J*. 1989;8:516-520.
7. Hendrix CM, Bruce HS, Kellman NJ, et al. Cutaneous larva migrans and enteric hookworm infections. *J Am Vet Med Assoc*. 1996;209:1763-1767.
8. Rizzitelli G, Scarabelli G, Veraldi S. Albendazole: a new therapeutic regimen in cutaneous larva migrans. *Int J Dermatol*. 1997;36:700-703.
9. Bouchaud O, Houze S, Schiemann R, et al. Cutaneous larva migrans in travelers: a prospective study with assessment of therapy with ivermectin. *Clin Infect Dis*. 2000;31:493-498.