

Case Report

Case Report of Serpiginous Rash on Foot in a Patient after Recent Travel to Brazil

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INTRODUCTION

Cutaneous larva migrans (CLM) is a parasitic infection caused by hookworms endemic to tropical and subtropical regions of the world.¹ It typically manifests as a pruritic, migrating, serpiginous eruption, often found on exposed skin areas, especially the feet. Given the rise in global human migration, it is essential for clinicians to be more vigilant regarding tropical diseases originating from helminth endemic regions. Recognizing the clinical signs of CLM is vital for prompt diagnosis, avoiding unnecessary tests, and initiating treatment sooner.

CASE REPORT

A 30-year-old male visited the local emergency department due to a possible toe infection. He reported a pruritic rash on his right third toe that had been present for about 10 days. His recent travel history included a two-week vacation in Brazil, during which he spent several days walking barefoot on the beaches. Physical examination revealed two erythematous, indurated, serpiginous plaques measuring approximately 1.5 cm in length and 0.1 cm in width on the left third toe, with mild surrounding erythema (Figures 1 and 2). No other toes were affected, and there were no skin changes noted elsewhere. Based on the clinical findings and travel history, the patient was diagnosed with CLM. Treatment was initiated with albendazole 400 mg daily for three days, leading to resolution of the rash within 10 days.



Figure 1. Thread-like, erythematous, serpiginous, raised rash on the medial aspect of left third toe.



Figure 2. Thread-like, erythematous, serpiginous rash on the plantar aspect of the left third toe.

DISCUSSION

Cutaneous larva migrans (CLM) is a parasitic infection in humans caused by hookworms. This disease primarily affects individuals living in tropical and subtropical regions, including the Southeastern United States, as well as many countries in Southeast Asia, Africa, South America, and the Caribbean.^{1,2} *Ancylostoma braziliense* is one of the most common causes of CLM, contributing to creeping eruption cases in Brazil and globally. Other reported causes include *Ancylostoma caninum*, *Uncinaria stenocephala*, and *Necator americanus*. These infections are more prevalent in countries where dogs and cats are not routinely treated with antihelminthic drugs,¹ as the hookworms require these animals' digestive tracts to survive.

A study in Sao Paulo, Brazil, identified a high occurrence of *Ancylostoma spp.* in cats and dogs.³ Another study found *Ancylostoma spp.* infection rates ranging from 10-91% in dog populations across the Caribbean islands. Disease incidence is also higher during the rainy seasons in these regions, which often aligns with peak travel times for many individuals.⁴

The life cycle of hookworms begins inside animals like cats and dogs. These parasites live in the intestines of these animals and shed their microscopic eggs in their feces. Once in the soil or sand, the eggs hatch into larvae that can survive for months. These larvae can then burrow into the skin of a new host, including humans. The nematode *Ancylostoma braziliense*, for example, can inadvertently infect humans by penetrating human skin using the enzyme hyaluronidase.^{1,2,5} However, the larvae are unable to penetrate the basement membrane layer of human skin, resulting in a wandering, serpiginous eruption that advances 1-2 cm per day as the larvae unsuccessfully attempt to enter the lymphatic system to complete their life cycle. Eventually, the parasite dies in the skin over a period of months.¹

On clinical examination, CLM typically presents with a single red papule that slowly progresses into a thread-like, serpiginous raised plaque accompanied by intense itching, appearing a few days after infection. CLM should be suspected in patients with a history of recent travel to endemic areas, especially those who frequent beaches or walk barefoot. Blood work or biopsy is not required or recommended for diagnosis, as obtaining an accurate biopsy is difficult due to the leading edge of the serpiginous rash not representing the true location of the larva.²

Other parasitic infections also can cause serpiginous eruptions. Larva currens, caused by *Strongyloides stercoralis*, typically appears on the trunk and progresses more rapidly.^{6,7} Gnathostomiasis, caused by *Gnathostoma spp.*, can present as a creeping eruption with intermittent, migratory swellings on the trunk and upper extremities. However, gnathostomiasis is a food-borne parasite often contracted by ingesting raw or contaminated seafood and is endemic in Southeast Asia, Central, or South America.⁸

Other differential diagnoses to consider include scabies, tinea pedis, allergic contact dermatitis, and jellyfish sting. Scabies is caused by the *Sarcoptes scabiei var. hominis* mite, which burrows into the skin. It typically presents with intensely pruritic papules distributed on the palms, soles, chest, and genital areas, unlike CLM, which almost exclusively presents on the feet.

Tinea pedis is a superficial fungal infection of the feet that can present as annular raised edge lesions with scale. However, the serpiginous appearance in CLM and the absence of scale would rule out tinea pedis as a diagnosis. Allergic contact dermatitis often presents as pruritic erythematous vesicles, bullae, or scaly papules and plaques. The serpiginous appearance would be unlikely with most contactants, as would the advancing leading edge.

While jellyfish stings could be considered due to the serpiginous appearance, the intense pruritus rather than stinging or burning would argue against this consideration. Additionally, the non-exposed areas of the interdigital toe webs would make jellyfish an unlikely diagnostic choice.

Although CLM is a self-limiting condition, medical treatment is preferred to alleviate patients from the intense pruritus that accompanies the rash. Treatments include a single dose (200 µg per kg body weight) of oral ivermectin, 400 mg of oral albendazole once daily for five to seven days, or topical 10-15% thiabendazole three times daily for five to seven days.¹ Oral ivermectin is effective but contraindicated in children under 15 kg, those less than five years old, and in pregnant or breast-feeding women. There is a reported nearly 100% cure rate with the above topical and systemic therapies with limited recurrence.²

Complications of creeping eruptions primarily include secondary bacterial infections, most commonly with *Staphylococcus aureus* and *Streptococcal species*.² Prevention includes wearing protective footwear or using a towel for outdoor recreational activities while on sand or soil.

CONCLUSIONS

High rates of international migration, recreational travel, and international work have increased global exposure to parasites not indigenous to the United States. Additionally, there are increasing reports of intestinal helminths acquired in the Southeastern United States.⁹ This report emphasizes the importance for clinicians to consider the patient's travel history when presented with a serpiginous eruption. Such considerations can aid in the clinical diagnosis, minimize unnecessary laboratory studies, and facilitate appropriate therapy in a timely fashion.

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