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Title

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Journal

Dermatology Online Journal, 20(10)

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Publication Date

2014

DOI

10.5070/D32010024266

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Letter

A case of cutaneous larva migrans presenting in a pregnant patient

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Dermatology Online Journal 20 (10): 17

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Abstract

Cutaneous larva migrans (CLM) is a pruritic dermatitis caused by migration of the animal hookworm larvae into the epidermis. We present a case of CLM in a 31-year-old pregnant woman. The treatment of CLM relies on antihelminthic agents, such as thiabendazole, albendazole, and ivermectin. This case was interesting in that the standard treatment options previously mentioned were contraindicated owing to the patient's pregnancy. Cryotherapy with liquid nitrogen resulted in complete resolution of her lesion and symptoms.

Keywords: cutaneous larva migrans, pregnancy

Introduction

Cutaneous larva migrans is a common skin infection in travelers to tropical and subtropical countries caused by the larvae of hookworms from cats and dogs. The adult worms live in the intestines of cats and dogs and larvae are excreted into the environment via defecation of the animals. They mature from first to third stage larvae in the soil, protected from desiccation and extreme temperatures [1]. The larvae are common on tropical beaches frequented by dogs and cats in regions such as the United States, the Caribbean, Central and South America, and Africa. The parasites infect humans as incidental hosts via human contact with the larvae through the soil. The larvae penetrate through intact epidermis in humans and are confined to the upper dermis, where they migrate 1-2 cm per day [2]. The initial sign may be a pruritic papule that develops into an erythematous migrating serpiginous track. The serpiginous tracks give rise to the name "creeping eruption," which was first used in 1874 [1]. Although the infection is self-limited, treatment is advised because of the potential for secondary bacterial infection from scratching and the psychological impact of the intense pruritus [3]. Oral and topical treatments are available [4]. Oral therapies, however, are contraindicated in pregnancy. Topical thiabendazole is poorly studied in pregnancy and can be costly to the patient. Freezing the leading edge of the tract with liquid nitrogen has been thought to be painful for the patient and poorly effective [5]. Freezing, however, may be the safest and most effective treatment modality during pregnancy.

Case synopsis

A 31-year-old G2P1 woman, at 37 weeks gestation, presented with a two-week history of a “moving bug in her skin” on the right foot. The patient recently returned home from a cruise throughout the Caribbean. She subsequently developed an intense itchiness over her foot and a migrating pink line. When the lesions persisted despite over the counter hydrocortisone treatment, the patient presented to dermatology for further evaluation.

Physical examination revealed an erythematous, scaly, serpiginous, indurated plaque of 2 mm wide and 6 cm long located on the lateral aspect of the right foot (**Figures 1-2**). The patient denied tenderness to palpation. A presumptive diagnosis of cutaneous larva migrans was established based on the clinical findings and travel history. Given the patient's pregnancy status, she was treated with 2 cycles of liquid nitrogen applied just beyond the advancing edge. The patient developed blisters approximately 3 hours post treatment and had complete resolution of her symptoms within 6 days.



Figure 1. Erythematous, scaly, serpiginous, indurated plaque of 2 mm wide and 6 cm long located on the lateral aspect of the right foot



Figure 2. Close-up of lesion on patient's right foot.

Discussion

Cutaneous larva migrans is the most frequent skin disease amongst travelers to tropical and subtropical countries [6]. It is a parasitic infection caused by the accidental infection of humans by larvae of helminthic species [7]. The most common parasite species include *Ancylostoma braziliense* (hookworm of wild cats and domestic dogs and cats), *Ancylostoma caninum* (dog

hookworm), *Uncinaria stenocephala* (dog hookworm), and *Bunostomum phlebotomum* (cattle hookworm) [8]. The adult worms thrive in the intestines of their host animal and shed their eggs into the environment via animal feces. The eggs live in environments protected from desiccation and extreme temperatures, such as sandy, shaded beaches. There they mature from first to third stage infective larvae [1]. Humans are accidental hosts for the hookworms and the larvae burrow through intact skin or enter the skin through hair follicles or sweat glands [9]. The larvae are not able to mature in the human host and they are confined to the upper dermis because they lack the enzymes needed to penetrate through the basement membrane [7]. Occasionally, scratching can remove larvae from the skin [10]. Migration to internal organs is uncommon with rare reports of lung infiltrates [7, 9]. However, migration through superficial tissues may be prolonged, producing a local or systemic eosinophilic response. *Lagochilascaris minor* may also cause cutaneous larva migrans, but these larvae have the potential to develop into adult worms and cause lagochilascariosis (festering abscesses involving the neck, mastoid, ear, nose, and oropharynx with occasional involvement of the central nervous system) [7].

Human infection typically occurs after contact with soil, especially sandy beaches contaminated by feces of infected dogs and cats. After percutaneous invasion, the larvae migrate 1-2 cm per day, leaving behind, raised, erythematous, serpiginous tracks [2, 3]. The lesions are intensely pruritic and tracks may be filled with serous fluid. In previously sensitized patients, more severe allergic reactions including erythema multiforme may develop [7]. The first manifestation of infection may be a pruritic, erythematous papule, with progression to the pathognomonic serpiginous tracks. The most frequent locations for infection are the dorsum and soles of the feet (unilateral and bilateral), buttocks, pelvic area, waist, legs, and shoulders [11]. Hookworm folliculitis is an uncommon form of cutaneous larva migrans characterized by pustular folliculitis of the buttocks [6]. Secondary bacterial infection is of concern in these patients owing to scratching the intensely pruritic lesions [5]. The differential diagnosis includes other parasitoses (larva migrans viscerale, larva currens caused by *Strongyloides stercoralis*, and cutaneous manifestations of infection with *Gnathostoma spinigerum*), allergic contact dermatitis, photoallergic dermatitis, and epidermal dermatophytosis [8, 9, 11]. The diagnosis is largely clinical based on the characteristic rash and history of travel to endemic regions. Laboratory evaluation including eosinophil counts, total IgE levels, and filarial antibody titers are rarely helpful. A skin biopsy is generally not advised since the parasite is often located beyond the visible lesions [9]. If a biopsy is done, however, the larva can be visualized in the epidermis beyond the leading edge of the tract, but is generally not seen. Other findings that may be present in the skin biopsy include spongiosis and intraepidermal vesicles with necrotic keratinocytes. Eosinophils may also be seen in the epidermis and upper dermis [13].

The infection is self-limited because the larvae are unable to complete their life cycle and generally die after 1-3 months, with the longest resolution reported after 1 year [6]. However, with the potential complication of bacterial infection, as well as the psychological impact of the pruritus, treatment is suggested. Topical and systemic therapies have been used to treat cutaneous larva migrans. Antiparasitic therapy is the gold standard with ivermectin as the drug of choice. Ivermectin is 100% effective at a single oral dose of 12 mg and has not been associated with any side effects. The efficacy of ivermectin has been validated in 3 large studies [7]. Albendazole is also highly effective, but requires doses of 400-800 mg/day for 3-5 days. Caumes et al reported a higher cure rate with ivermectin (100%) versus albendazole (46%) in a randomized trial of 21 patients [14]. Oral thiabendazole is effective when given twice daily for 3-5 days. However, the drug is poorly tolerated and side effects limit usage [1, 7]. Topical 15% thiabendazole three times daily for 5 days has been reported to have cure rates exceeding 98%, but has limited value for multiple lesions and can be expensive for the patients [4, 7]. Topical thiabendazole may be systemically absorbed and usage in pregnancy is poorly studied. Prior to the widespread availability of antiparasitic agents, freezing the leading edge of the lesions with liquid nitrogen was the mainstay of treatment [1]. However, the procedure is painful to the patient and is often ineffective because the larva is usually located several centimeters beyond the visible end of the track [4]. Topical corticosteroid creams and systemic antihistamines may provide symptomatic relief but are not curative [5]. All antiparasitic agents are category C, making them undesirable in pregnant women [15]. When topical steroids and antihistamines fail to control the symptoms, cryotherapy may be the safest curative treatment for cutaneous larva migrans during pregnancy. Preventative measures such as banning dogs and cats from the beaches, deworming dogs and cats, wearing shoes while walking on the beach, lying on sand that is washed by the tide, using a mattress or chair when lying on the beach to avoid lying directly on the sand can also help decrease the incidence of cutaneous larva migrans in endemic regions [6].

Conclusion

Misdiagnosis has been reported in up to 58% of patients with cutaneous larva migrans [7]. Owing to the increased incidence during summer months and holidays, it is important for dermatologists to be familiar with this parasitosis. Although cutaneous larva migrans is self-limited, the intense pruritus, risk of secondary infections, and the psychological distress of a migrating parasite inside one's skin suggest that treatment is necessary. Cryotherapy can be a good alternative when standard therapy is not an option, such as in the case of a pregnant woman.

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