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Case Report

Cutaneous Larva Migrans: Clinical Challenges and Insights from a Case Report with a Literature Review

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Abstract

Background: Cutaneous larva migrans (CLM) is a parasitic infection caused by the accidental penetration of canine hookworm larvae into the superficial layers of human skin. Although typically self-limiting, delayed diagnosis may result in complications such as secondary infections or allergic reactions.

Case Presentation: The case involved a 54-year-old man with a history of hypertension who presented with a creeping, erythematous lesion on his left leg, accompanied by severe pruritus and a history of contact with a pet dog. After confirming the dog's hookworm infection and conducting further clinical evaluation, a diagnosis of CLM was established. Treatment with albendazole and an antihistamine resulted in complete resolution of the patient's symptoms.

Conclusion: Although CLM is typically a self-limiting condition, timely initiation of treatment can significantly reduce the duration and severity of symptoms. The growing trend of pet ownership has increased the risk of CLM transmission, underscoring the importance of implementing effective preventive measures.

Keywords: Cutaneous Larva Migrans, Zoonotic Hookworm, *Ancylostoma caninum*, Zoonotic Parasitic Infections

1. Background

Cutaneous larva migrans (CLM), known as "creeping eruption", is a prevalent parasitic skin infection resulting from the unintentional penetration and migration of canine hookworms into the subcutaneous tissue of humans. The epidemiology of CLM is mainly related to the high prevalence of the parasite in tropical and subtropical areas.[1,2] CLM has been associated with *Ancylostoma caninum, A. braziliense,* and *Uncinaria stenocephala,* which are all hookworms of dogs and cats. *Bunostomum phlebotomum,* a cattle hookworm, is also capable of causing short-lived CLM in humans.[3,4]

Once the larvae enter human skin, they cannot complete their life cycle since humans are not their natural host. Thus, larvae are restricted within the outermost skin layers (i.e., epidermis, and more rarely the upper dermis).[2] This results in a gradual migration, usually a few millimeters to a few centimeters per day, as the larvae tunnel through the skin.[2] This action leads to itchy, red, and winding skin lesions. They can usually be seen on the surface of the skin, several centimeters long.

This parasitic infection usually targets the body parts that come in contact with contaminated soil, such as the feet, legs, buttocks, or back. The most commonly infested areas of the human body are those exposed to soil and contaminated environments.[5]

Laboratory results are often normal or non-specific, and therefore, this condition is clinically diagnosed based on the physical examination alone. Nevertheless, there may be an elevated eosinophil count.[6] However, delays or misdiagnosis can lead to inappropriate treatment approaches.[7]

Although larvae cannot penetrate the basal layer of the skin and typically resolve on their own within 1-2 months without treatment, complications may still occur. These can be localized or systemic, such as an allergic reaction; secondary infections by *Staphylococcus aureus* and *Streptococcus* species, Loeffler syndrome, and eosinophilic enteritis. There is a clear need to address these complications in a timely and accurate manner.[1,2]

You are likely to be at a greater risk of becoming infected if you work with or have contact with animals (like dogs and cats) that could be infected with hookworms, or if you come in contact with potentially contaminated soil and/or sand (for example, animal handlers, agriculture workers, or gardeners). This potential risk is a cause for concern even in the absence of direct contact with animals, as CLM can be considered

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an occupational hazard.[8,9]

The present study intends to describe in more detail the potential clinical spectrum, diagnostic challenges, and secondary complications of CLM, with an emphasis on the pathophysiological mechanisms driving larval migration and the associated consequences. This will help ensure diagnostic accuracy and improve therapeutic approaches in high-risk host populations.

2. Case Presentation

A 54-year-old male patient with a history of hypertension

The diagnosis was established by integrating clinical findings with known exposure to a zoonotic source. The suspected etiologic agent was the hookworm species *Ancylostoma caninum*, which is most commonly-transmitted through direct skin contact with contaminated surfaces. The patient was given four doses of 400 mg albendazole tablets daily by mouth along with an antihistamine for the itching, resulting in marked improvement. The lesion started to regress, with resolution of all symptoms reported within a couple of weeks.

presented with severe itching and redness on his left lower leg (Figure 1). The dermatologic lesion had progressively developed into a serpiginous, erythematous rash characteristic of CLM. The patient denied any history of insect bites, skin trauma, or travel to endemic regions for parasitic diseases.

Further history revealed that the patient lived with a pet dog and walked barefoot on tiled floors during the day. On physical examination, there was an erythematous, creeping lesion on the left leg that highly suggested CLM.

Figure 1. The Dermatologic Lesion with Creeping, Erythematous Redness Rash on the Lower Left Leg of the Patient.

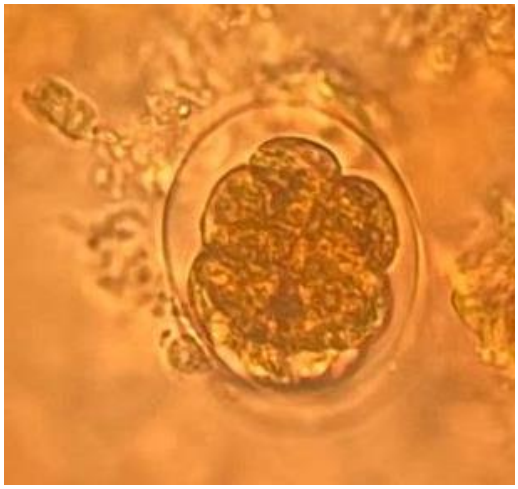

Figure 2. *A. caninum* Egg in the Feces of the Pet (Dog) (×400).

CLM is a benign, self-limiting disease; however, it can cause intense discomfort and distress, necessitating prompt diagnosis and treatment. In conclusion, the present case emphasizes the necessity of sensitizing healthcare personnel to zoonotic parasitic diseases such as CLM. It highlights the importance of preventive steps, such as raising awareness around good hygiene practices, regularly deworming pets, and informing at-risk groups to lessen the public health impact of such diseases.

3. Discussion

CLM, primarily resulting from the zoonotic hookworm

larvae of *Ancylostoma braziliense* and *Ancylostoma caninum*, is a common yet frequently unnoticed tropical disease.[4] Once restricted to tropical and subtropical regions, there have been more reports of cases in temperate zones. This may be explained by increased international travel, globalization, and pet ownership.[2,7] This case highlights the necessity of recognizing CLM as a significant zoonotic disease with the potential to transcend geographic boundaries, involving sporadic transmission among dogs in close contact with humans.

Unlike other parasitic infections, when CLM larvae burrow into human skin, they do not enter the bloodstream or lymphatic system. However, what they do is burrow beneath the epidermis and travel within the subcutaneous plane to create serpiginous tracts, which manifest as raised linear lesions on physical exam.[10] In the entry point, there may be a group of erythematous papules with severe itching. Vesicles sometimes form along the course of the larvae, and older lesions can become scaly. Both the process by which tracks form and the itch in the human host (the immune response to moving larvae) are involved in the process. While lesions can develop anywhere on the body, they are most commonly found on the feet, buttocks and thighs, where skin touches contaminated soil or sand. These lesions typically resolve in one to two months spontaneously, although they can persist in some cases for months.[11]

Children and adolescents are especially susceptible to CLM because they are exposed to more outdoor activities, which increases the likelihood of direct contact with contaminated sites. One of the challenges in CLM management is misdiagnosis, as its manifestations resemble those of other dermatological conditions such as eczema, urticaria, or bacterial infections like impetigo, leading to delayed treatment.[5] Management can become challenging, especially in cases that remain unresolved, leading to chronic itching, skin lesions, and secondary bacterial infections, none of which aids in the immediate care of the patient. This highlights the need for early diagnosis and treatment.

Laboratory findings commonly include peripheral eosinophilia and increased serum IgE. Similar findings are observed in other conditions, including insect bites, tinea corporis, and *Strongyloides stercoralis* larva currens. Therefore, a complete differential diagnosis is vital.[11] This infection generally resolves spontaneously in five to six weeks as the larvae die. However, treatment is often essential to provide relief from unrelenting itching and skin lesions that interfere with daily life.

The recommended first-line treatment for CLM is a fourth-generation benzimidazole anthelmintic, oral albendazole, at a dose of 400 mg per day for 4 days.[15] Ivermectin, also available as a single-dose oral treatment, is another effective option. Topical therapies (e.g., 10–15% thiabendazole solution) may provide relative local relief but are limited in efficacy. Antihistamines are commonly administered to alleviate the pruritus.[12] Untreated cases can lead to combinations of secondary infections and, though rare, Loeffler's syndrome, a pulmonary syndrome that necessitates treatment and is characterized by eosinophilic infiltration.[13] In the current case, the oral treatment consisted of albendazole 400 mg tablets once daily for four days, in addition to an antihistamine for itching relief, with marked improvement.

This is an important public health concern and is particularly relevant for canine health in light of the increased popularity of responsible veterinary care and community education.[14] Zoonotic hookworm is now recognized as an important environmental pathogen, as infected dogs contaminate soil and sand with infectious larvae. This represents a risk for humans, especially in urban/semi-urban settings and, as in our case study, sporadic, rare cases. At the level of parasite management, strategies to reduce zoonotic transmission risk include regular deworming of pets, public educational campaigns, and promoting good hygiene to reduce environmental contamination and human exposure.[15]

This case highlights the need to include CLM in the differential diagnosis of pruritic dermatoses, particularly in patients with an exposure history suggestive of this condition. Timely diagnosis and treatment are essential to prevent complications and improve prognosis.

4. Conclusion

This case highlights the necessity of clinical awareness regarding CLM, a preventable zoonosis with a significant impact across all ages. While CLM is typically self-limited, expedient initiation of appropriate anthelmintic therapy can dramatically decrease the duration of symptoms and improve comfort for the patient. Changes in modern living, especially the growing popularity of owning pets, have increased the risk of exposure to zoonotic diseases like CLM. Taking preventive measures is crucial, including wearing shoes indoors and when walking on soil in gardens or residential areas. Deworming pets regularly, using protective shoes to prevent contamination, and performing regular parasitological tests are critical preventative measures to minimize risk. Late identification of CLM can result in delayed treatment and worsening of symptoms. Hookworm larvae can travel into the skin in both travelers and domestic settings. Delivering early and accurate diagnosis allows clinicians to provide effective and timely treatment, which decreases the burden of disease while increasing patient outcomes.

Author Contributions

Authors contributed equally to this work.

Conflict of Interest Disclosures

All authors declared that they have no conflict of interest.

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