

CASE REPORT

Cutaneous larva migrans: A case report diagnosed using teledermatology

Mohammed Saleh Al-Dhubaibi¹  | Ghada F. Mohammed²  | Saleh Salem Bahaj³  | Ahmed Ibrahim AbdElneam^{4,5}

¹Dermatology, Department of Medicine, College of Medicine, Shaqra University, Dawadmi, Saudi Arabia

²Department of Dermatology and Venereology, Faculty of Medicine, Suez Canal University, Ismailia, Egypt

³Department of Microbiology and Immunology, Faculty of Medicine and Health Sciences, Sana'a University, Sanaa, Yemen

⁴Department of Clinical Biochemistry, Department of Basic Medical Sciences, College of Medicine, Shaqra University, Dawadmi, Saudi Arabia

⁵Molecular Genetics and Enzymology Department, Human Genetics and Genome Research Institute, National Research Center, Cairo, Egypt

Correspondence

Saleh Salem Bahaj, Department of Microbiology and Immunology, Faculty of Medicine and Health Sciences, Sana'a University, Sanaa, Yemen.
Email: salehbahaj2025@gmail.com

Key Clinical Message

Teledermatology is a branch of dermatology that transmits medical data over several miles using telecommunications technologies. It involves the diagnosis of skin lesions using digital photographs and related patient data, and it can be especially helpful for patients in remote areas who might not have convenient access to dermatologists. Cutaneous larva migrans (CLM) is a zoonotic parasitic disease found in tropical and subtropical areas that are sunny and hot; however, cases of allocated resources have been disclosed in Saudi Arabia. There is little information about the frequency of CLM as a work-related illness among employees who are exposed to potentially polluted soil or have close contact with pets. In this paper, we present an ancestral case of CLM in Saudi Arabia, explaining the hazards of CLM infection. CLM may pose a challenge for physicians in non-endemic areas regarding assessment, therapeutic interventions, and protection, especially at work. The holistic strategy to CLM assessment, which includes the participation of numerous science competencies (e.g., veterinarians, dermatologists, and occupational physicians), may contribute to a better understanding of the expansion of human CLM and related risk factors, lowering the chance of infection.

KEYWORDS

helminthic infection, larva migrans, Saudi Arabia, teledermatology, tropical area

1 | INTRODUCTION

Cutaneous larva migrans (CLM) is a zoonotic parasitic disease driven mainly by soil-transmitted hookworm larval skin migration (Ancylostomatidae). The first most common causative cause of human CLM is contamination of the digestive system tracts of definitive

hosts, such as dogs, cats, and cattle, resulting in skin encroaching lesions, whereas they reach the skin of unintentional hosts from the surroundings, causing cutaneous creeping lesions.¹ CLM disease is also thought to be endemic in hot tropical and subtropical areas, and observations of ancestral cases in Saudi Arabia have been rising.

All authors have read and approved the final version of the manuscript (Saleh Salem Bahaj) had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

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2 | CASE REPORT

In September 2022, a 35-year-old female patient delivered to us through the AskUrDr-For-Doctors online medical consultation application a serpiginous skin path that had appeared 10 days previously as a point-like crusted portion on the medial side of her left ankle. To relieve itching, the patient applied cold cream as a moisturizer. Since then, the growths have grown at a rate of 1–2 cm per day, becoming a 2–3 mm wide pinkish, edematous, linear, serpiginous lesion (Figure 1). Initially, there were fluid-filled sacs. Dermographism, tunnels, or lymphadenopathy were not found.

The patient did not disclose any issues of central importance or travel outside Saudi Arabia in the prior 2 years but did disclose walking with bare feet numerous times on a farm where there were cats and dogs. Furthermore, the patient mentioned washing the sanctuary, trying to feed the cats, disseminating endoparasiticides, and strolling the dogs with his bare hands.

Regular blood test results revealed that everything was normal, and no eosinophilia was discovered in the complete blood picture investigative process. The peripheral smear was ordinary, and the chest X-ray revealed no pathology. We recommended Albendazole (Albenda)[®] 400 mg daily for 3 days. To verify the diagnosis, a biopsy may be performed.²

3 | DISCUSSION

Dermatology has been using telemedicine for a while,³ yet because of advancements in technology and the latest COVID-19 outbreak, its use has grown. Remote and underserved groups can now access it.⁴



FIGURE 1 Linear, serpiginous, erythematous localized lesion on medial side of her left ankle. (A) The entering point of the larva with crust formation after itching. (B) The ending point of the migration of larva at the moment of taking the picture.

Teledermatology is a cutting-edge technology that makes it easier to provide healthcare remotely. Dermatology is a good candidate for this type of healthcare prototype because it is a visually dependent specialty. It is both doable and trustworthy. There are still many patients who cannot access competent dermatological care. Due to technological improvements, physicians can now treat a variety of clinical groups that require skin knowledge without having to pay additional fees.⁵

Mature Ancylostomatidae protozoa reside in the small bowel of the definitive hosts (cattle, dogs, and cats), and eggs are released into the environment via feces.⁶ After infection in humans by inadvertent larval permeation in the skin, tiny itchy erythematous papules or vesicles appear with the formation of crawling paths through the corneal layers of the epidermis.⁷ Larvae usually progress at a rate of 1–3 cm per day and create skin redness with a distinct serpiginous appearance or have bullae formation.^{1,8} Because laboratory results may be unremarkable and/or inconclusive, the assessment is frequently based solely on the clinical assessment.⁹ As a result, postponed or incorrect diagnoses have potential consequences, leading to ineffective therapies.² Even though larvae are unable to access the skin's basal membrane, resulting in a clinical improvement in up to 2 months, secondary consequences (e.g., local or anaphylactic reactions, secondary pathogenic bacteria by *Staphylococcus aureus* and *Streptococcus* species, eosinophilic enteritis, and Loffler syndrome) may occur, emphasizing the significance of an early etiological diagnosis.¹⁰ Lesions are most commonly located in the lower distal extremities, such as the dorsa of the feet and the inter-digital spaces of the toes, but they can also be found in the anogenital region, buttocks, and hands. On CLM lesions, there is strenuous pruritus.^{10,11} Excessive exposure to animals (i.e., dogs and cats) that may possess ancylostomatids, as well as workers in communication with potentially infected soil or sand, such as breeding stock, farmworkers, agricultural workers, and groundskeepers, may be regarded as a high threat of infection, implying the threat of CLM as a work-related illness. Walking barefoot, wanting to wear open-toe shoes, or having to sit in polluted soil or sand are the most common ways for people to become infected at polluted sites.

4 | CONCLUSION

Our report describes a case of CLM on the medial side of her left ankle. The growths have grown at a rate of 1–2 cm per day, becoming a 2–3 mm-wide pinkish, edematous, linear, serpiginous lesion. Medical treatment was recommended daily for 3 days. Teledermatology is a

cutting-edge technology that makes it easier to provide healthcare remotely.

AUTHOR CONTRIBUTIONS

Mohammed Saleh Al-Dhubaibi: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization. **Ghada F. Mohammed:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft; writing – review and editing. **Saleh Salem Bahaj:** Investigation; resources; software; validation. **Ahmed Ibrahim Abdelneam:** Data curation; formal analysis; resources; visualization; writing – original draft.

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CONFLICT OF INTEREST STATEMENT

There are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Institutional review board and Research Ethical Committee in accordance with the Helsinki Declaration guidelines.

TRANSPARENCY STATEMENT

The lead author Saleh Salem Bahaj affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned have been explained.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

ORCID

Mohammed Saleh Al-Dhubaibi  <https://orcid.org/0000-0002-6418-6647>
 Ghada F. Mohammed  <https://orcid.org/0000-0003-3074-1347>
 Saleh Salem Bahaj  <https://orcid.org/0000-0001-6582-907X>

REFERENCES

- Hotez PJ, Brooker S, Bethony JM, Bottazzi ME, Loukas A, Xiao S. Hookworm infection. *N Engl J Med.* 2004;351(8):799-807.
- Hochedez P, Caumes E. Hookworm-related cutaneous larva migrans. *J Travel Med.* 2007;14(5):326-333.
- Pasquali P, Sonthalia S, Moreno-Ramirez D, et al. Tele dermatology and its current perspective. *Indian Dermatol Online J.* 2020;11(1):12-20.
- McKoy K, Halpern S, Mutyambizi K. International tele dermatology review. *Curr Dermatol Rep.* 2021;10(3):55-66.
- Pala P, Bergler-Czop BS, Gwiżdż JM. Tele dermatology: idea, benefits and risks of modern age – a systematic review based on melanoma. *Postepy Dermatol Alergol.* 2020;37(2):159-167.
- Massetti L, Kamani J, Wiethoelter A, McDonagh P, Colella V, Traub RJ. Field application of a novel multiplex qPCR assay reveals the occurrence of the zoonotic hookworm *Ancylostoma braziliense* in Nigerian dogs. *Acta Trop.* 2021;213:105758.
- Feldmeier H. Tungiasis and cutaneous larva migrans: unpleasant travel souvenirs. *Med Monatsschr Pharm.* 2009;32(12):440-444.
- Veraldi S, Çuka E, Pontini P, Vaira F. Bullous cutaneous larva migrans: case series and review of atypical clinical presentations. *G Ital Dermatol Venereol.* 2017;152(5):516-519.
- Heukelbach J, Feldmeier H. Epidemiological and clinical characteristics of hookworm-related cutaneous larva migrans. *Lancet Infect Dis.* 2008;8(5):302-309.
- Gao YL, Liu ZH. Cutaneous larva migrans with löeffler's syndrome. *Am J Trop Med Hyg.* 2019;100(3):487-488.
- Caumes E. Treatment of cutaneous larva migrans. *Clin Infect Dis.* 2000;30(5):811-814.

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