

Rash in a foreign worker

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Nurjahan MI, Tevaraj P. Rash in a foreign worker. *Malays Fam Physician*. 2016;11(2 & 3):39–41.

Keywords:

Pruritis, skin rash, creeping, plantation, Malaysia

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Abstract

Hookworm-related cutaneous larva migrans (HrCLM) is a zoonosis which is endemic in many sub-tropical and tropical countries including Malaysia. We report a case of a 40-year old plantation worker who presented with a pruritic rash on his abdomen. It is important for clinicians to diagnose and treat HrCLM promptly as this condition results in considerable morbidity when treatment is delayed.

Case Summary

A 40-year-old male foreign worker employed in a palm oil plantation presented with itchy rashes over his abdomen, which was spreading daily over the past 1 month. The skin lesions were intensely pruritic; however, there was no discharge or pain. He did not have any history of fever, insect bite or exposure to chemicals. He did not rear any pets. He does not remember being bitten or having pain before the onset of the rashes.

His job is to harvest the palm oil fruits, cleaning and carrying palm leaves that have fallen on the soil. Sometimes, he sleeps under the tree on the ground during his lunch break. He does not wear a shirt while working because he sweats a lot. None of his co-workers had similar rashes. He had no past history of atopy, rhinitis, asthma or other medical illnesses. He was treated by a doctor in a different clinic 2 weeks earlier with an antifungal cream and oral antihistamine with no improvement.

On examination, the patient was well built and of short stature. He was comfortable and afebrile. Erythematous, serpiginous and raised lesions with scattered papules in a curvilinear pattern were noted over his abdomen. There were some excoriations over the skin with blistering (**Figure 1**). He did not have any rashes over his legs or groin. He did not have any lymphadenopathy. There were no other significant findings.



Figure 1. Curvilinear, raised and erythematous lesions over the abdomen

Questions

1. What is your provisional diagnosis?
2. What is the aetiology and pathogenesis?
3. What are your differential diagnoses?
4. What complications may occur in this condition?
5. What are the treatment options in this condition?
6. What preventive measures are effective in this condition?

Answers

1. The provisional diagnosis is hookworm-related cutaneous larva migrans (HrCLM).

The diagnosis of HrCLM is made clinically on the basis of a typical clinical presentation. There is usually a history of the patient walking barefooted on the beach; working or lying on contaminated soil without proper attire; and carrying plants, leaves and soil close to the body. The patient later develops pruritic, serpiginous, erythematous cutaneous eruption rashes that keep advancing. This creeping eruption as a clinical sign is diagnostic; laboratory investigations or biopsy is not useful.^{1,2,4} In this patient, carrying of palm tree leaves contaminated with soil containing cat hookworm and lying on the ground could have contributed to the infection being located on the abdomen.

2. HrCLM is a parasitic skin disease caused by accidental percutaneous penetration and

subsequent migration of animal hookworm larvae in the epidermis. It is most commonly caused by the hookworm that infects dogs and cats. The parasite's eggs are passed from animal faeces into warm, moist soil where the larvae hatch. Transmission occurs when the skin comes in direct contact with contaminated soil; while walking barefooted, sitting or lying on it, and when manual workers work on contaminated soil without proper attire.

In humans, the larvae are unable to penetrate the basement membrane to invade the dermis, so the disease remains limited to the epidermis. The larva, confined to the epidermis, migrates aimlessly; advancing about 3 cm per day forming, winding, serpigenous, tracts, which are erythematous, raised about 2–3 mm in width and 5–7 mm in length. The tracts may contain serous fluid and small blisters caused by immune response to the secretions of the larva.

The larva is normally about 2 cm beyond the lesion. However, it is important to note that the location of the track does not necessarily relate to the location of the larva, which may move randomly ahead of the track. Penetration of the larva can cause tingling or prickling of the skin at that site and eruption within 30 minutes. Larvae can remain dormant for some months but migration can sometimes begin immediately. The incubation period can vary from 15 to 165 days.

The frequently affected areas are feet, buttocks and abdomen. Genitals and hands can be affected in children.

The common species causing cutaneous larva migrans are as follows:

- a. *Ancylostoma braziliense* that infests dogs and cats
- b. *Ancylostoma caninum* that infests dogs
- c. *Uncinaria stenocephala* that infests dogs
- d. *Bunostomum phlebotomum* that infests cattle
- e. Occasionally, human hookworms such as *Necator americanus* and *Ancylostoma duodenale* have been found to cause larva migrans

3. The differential diagnoses are as follows:

- a. Scabies
- b. Erythema chronicum migrans
- c. Phytophotodermatitis

Less commonly, creeping skin eruption may be due to:

- d. Larva currens caused by *strongyloides stercoralis*, which spreads at the rate of 5 cm per hour and the tracts are less haphazard and confined to the buttocks and trunk
- e. Gnathostomiasis, cutaneous paragonimiasis and fascioliasis; the latter is caused by liver fluke

4. Complications of cutaneous larva migrans are as follows:

- a. Secondary bacterial infection
- b. Allergic reaction
- c. Loeffler syndrome

5. Treatment options for cutaneous larva migrans are as follows:

- a. Ivermectin is the drug of choice in a single dose of 12 mg (200 µg per kg bodyweight). It is well tolerated and highly effective but contraindicated in children less than 5 years.
- b. Topical thiabendazole 15% cream for 5 days in children weighing less than 15 kg where ivermectin cannot be used; although less effective, it is a good alternative for young children to avoid the potential side effects of systemic medications.
- c. Oral Albendazole 400mg twice daily for 3–7 days is usually well tolerated.
- d. Freezing the tip of the lesion has been tried but is not effective because the tip of the serpiginous track does not indicate the actual site of the moving larva.
- e. Ethyl chloride spray has been tried but was found to be ineffective.
- f. Cryotherapy with liquid nitrogen has also been tried but was found to be ineffective as well as caused ulcerations and blisters.

6. Prevention

- a. Most effective steps are the use of appropriate footwear; closed shoes must be worn while walking outdoors and on beaches.
- b. Refrain from sitting or lying down on soil or sand.
- c. Cats or dogs should
 - i. be regularly dewormed.
 - ii. not be allowed in the bathroom and on the beaches.
 - iii. be prevented from defecating in public areas like parks and playgrounds; animal waste must be appropriately and immediately cleaned up.

Practice points

1. This condition is often missed in primary care.^{1,2,5,6}
2. Even though this condition is self limiting, the intense pruritus and risk of infection mandate the treatment.^{3,4}
3. Bacterial infections secondary to scratching can complicate the condition and should be treated with appropriate antibiotics.⁷
4. Primary healthcare practitioners need to be well informed about this condition as it is easily treatable.^{8,9}

Conflict of interest

None

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