HOOKWORM-RELATED CUTANEOUS LARVA MIGRANS IN TRAVELER WITH AN UNUSUAL ENTRY SITE

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ABSTRACT

Hookworm-related cutaneous larva migrans (HrCLM), or creeping eruption, is an infestation caused by penetration and migration in the skin of animal hookworm larvae. It is self-limited infection but has been reported to persist for as long as 18 months. In this case, a 23-year-old healthy Thai woman who spent vacation for 3 days in Phuket and her activities included sunbathing and covering herself with sand on the beach frequented by many dogs. She developed an eruption on her abdomen a few weeks after her return to Bangkok and was treated by three doctors but the eruption prolonged for 8 months. She had an elevated serpiginous, erythematous and intertwined track localized which initial point at umbilicus, turn right, and migrated up straight then turning right along the left costal margin. A biopsy taken from the leading end of the trail revealed hookworm larva structure and cutaneous larva migran was diagnosed. The patient was treated only with oral albendazole 400 mg twice a day for 7 days. The pruritus stopped within 2 days after treatment and no recurrence was observed after 6 months. This is the first report of an unusual entry site at umbilicus.

Keywords: Cutaneous larva migrans, umbilicus, albendazole, Thailand

INTRODUCTION

Hookworm-related cutaneous larva migrans (HrCLM) is a helminthic skin infestations caused by larvae of domestic animal hookworms. Species include *Ancylostoma braziliense* and *Ancylostoma caninum*[1-3]. With conditions for infection more favourable in tropical or subtropical areas. The adult hookworms live in animal intestines, and their eggs are spread on the soil during defecation. Egg hatching and larva survival are facilitated by moist grounds like beaches. Within a few days the larvae larvae become infectious and acquire the ability to penetrate the host skin [4]. These larvae in humans are not capable of maturation and only migrate within the epidermis. HrCLM occurs commonly in exposed areas, such as feet, buttocks, and hand. .Without appropriate treatment, the larva dies and is resorbed within weeks or months of invasion. The first sign may be a pruritic papule that evolves to the classic serpiginous erythematous tract (i.e. “creeping eruption”). The diagnosis is usually based on physical examination and history, such as occupational history or endemic areas travel; and skin biopsy is commonly not necessary [4,7]. From a parasitological point of view, differential diagnoses include diseases in which creeping eruption may be due to the other nematode larvae such as *Gnathostoma* spp., fly maggots, and Scabies. Oral ivermectin and albendazole have become the first line treatments. [8,9].

OBJECTIVE

Here, we present an exceptional HrCLM or non-human hookworm infection or creeping eruption. To describe diseases in returned travelers with larva resided in an unusual entry site at umbilicus and refine key messages for care before and after travel.

CASE REPORT

The patient was a 23-year-old healthy Thai female presented an intensely pruritic eruption on her abdomen of 8 months’ duration after traveling to Phuket island, southern Thailand. Her activities included sunbathing and covered herself (wearing bikini) with sand on a beach. She was seen by three doctors and two were dermatologists. She was treated with some oral medicine including antihistamine and topical applications, but the eruption persisted.

Physical examination revealed a healthy-appearing woman, the linear tract of an elevated, well-defined, erythematous serpiginous lesion localized on her left abdomen (Figure 1). The umbilicus is the initial point of the migratory tract to the left costal margin of the chest in S shape. The old tract left by the larva’s migration

was paler than the recent portion and an inflamed papular eruption at the leading end of the tract was seen. Physical examination was otherwise unremarkable, and no adenopathy was present.

Routine laboratory data included a normal complete blood count without eosinophilia, a negative serology for human immunodeficiency virus, and normal findings on a general health panel. A routine chest roentgenogram showed no abnormality.

A 4 mm punch biopsy was taken from the advancing end of the lesion. The histological examination showed burrows in the epidermis which the larva was observed (Figure 2A). The structure was morphologically compatible with *Ancylostoma* larvae (Figure 2B), and cutaneous larva migrans was diagnosed.

This patient was treated with albendazole orally at a dosage of 400 mg/day for 7 days [10]. The pruritus and the progression of the cutaneous manifestation stopped within 2 days after treatment. No recurrence of was observed after 6 months. After the treatment with albendazole, the skin lesions resolved with post-inflammatory hyperpigmentation.

Figure 1
A single serpiginous, erythematous, raised tracks was seen on the left abdomen. The larva's path began from umbilicus and migrated up in S shape to the left costal margin of abdomen.

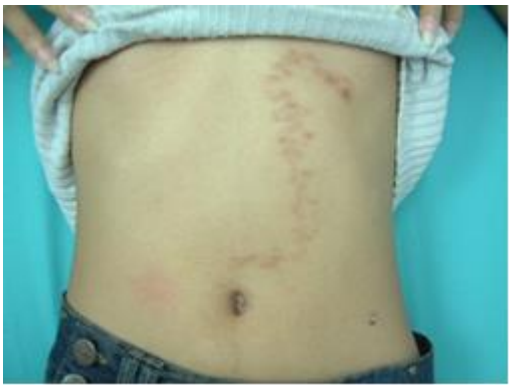
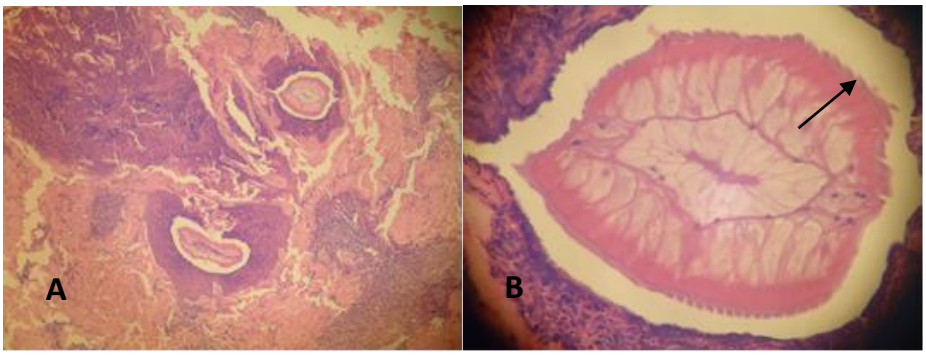


Figure 2
The histologic section of biopsy tissue taken from the leading edge of the erythematous tract.
A: Cross-sectioned larvae are found in tunnels at the dermo-epidermal junction.(H-E stain, x 200).
B: Magmified view of a part of Fig. 2-A. Note the striation of the larva's sheath (arrows) which revealed to *Ancylostoma* spp. (H-E stain, x 400).



DISCUSSION

This patient had history of acquiring HrCLM by covering herself with sand on the beach where there are a large number of stray dogs and cats. According to official organizations and various newspapers, the number

approximately 12,000 street and stray dogs live on the resort island of Phuket. These animals harbored one or more zoonotic species of gastrointestinal parasites, with hookworm infection being most common[1-3]. The infection occurs when humans come in contact with contaminated soil. In this case the larva may reside deep in the fissured skin of umbilicus that can escape during body cleaning before migration. Therefore the lesion showed the initial point from umbilicus. The larva penetrated in the epidermis at the site of entry, the fissured skin of umbilicus in this case, and a tract was left after migration. The serpiginous tract was lengthened at average of 2- to 3-mm- daily from starting point to the end at costal margin of left upper abdomen along the basal layer of the epidermis. Because of unable to secrete sufficient protease or specific collagenase, exsheathment and migration of the larva to upper dermis did not occur [11].

This case was cutaneous larva migrans diagnosed by clinical features and confirmed by histopathologic examination. Usually, it is rare to have a biopsy revealing the organism [4,12]. In this report, it was fortunate that biopsy specimens from the advancing border of the tract revealed the tunnel at the dermo-epidermal junction with cross-sectioned larva inside. In tissue section, the larva with striated sheath revealed *Ancylostoma* sp. but the identification of the species is difficult because lateral double alae could not be observed [13]. According to previous reports, the larvae usually die in 2 to 8 weeks but rarely may persist up to a year [8]. The infective larval stage in our patient was still viable and persisted about 8 months before responding to the treatment. Although the mechanism of action is still not completely known. The routine laboratory did not show any significance.

Albendazole has been reported of successful therapy for many HrCLM patients with minimal to no side effects including Thai herbal plants. [10,14,15]. We adopted an albendazole approach to treat at a dose of 400 mg once daily for 7 days. The migrating larva may be removed or killed from excision or biopsy and the organism remaining may be clear by the defense mechanism and immune system and the action of albendazole. This case had a satisfactory result, skin lesions resolved without relapse at follow-up examinations.

CONCLUSION AND FUTURE WORK

HrCLM is a striking example of an unusual initial site in umbilicus for contribution to improved knowledge of tropical diseases, as it is almost benign and self-limiting, it is often likely to be overlooked. Indeed, the description of HrCLM in large series of briefly exposed travelers has contributed to a better understanding of the incubation period and natural history of the disease. Especially Phuket, the number of travelers who take a trip to Thailand increasing each year because of the fissured skin the popularity and accessibility of world travel and exotic vacations. Therefore HrCLM should be included in the differential diagnosis of patients who develop typical pruritic serpiginous lesion and have recently traveled to tropical regions. Finally the Phuket Governor has a plan for strays for solving the problem of dogs and would make Phuket the first province in Thailand to be free of strays.

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