Cutaneous larva migrans – a case report in amplas community health centre, Medan

Adriani Sakina, Dewi Darlan

1 Faculty of Medicine, Universitas Sumatera Utara, Jl. dr. Mansur Kampus USU, Medan
2 Parasitology Department, Faculty of Medicine, Universitas Sumatera Utara, Jl. dr. Mansur Kampus USU, Medan

E-mail: dmasyithah57@gmail.com

Abstract. Cutaneous Larva Migrans (CLM) is one of the most helminthic skin infestations, frequently in tropics and subtropical countries, including the Southeastern United States, Central, and South America, Southeast Asia, and Africa. CLM was first described in 1874 by Lee who named this dermatitis as "creeping eruption." Then, in 1893, Crocker introduced the term of "larva migrans." CLM is caused by the larvae of animal hookworms with the most common being Ancylostoma braziliense and Ancylostoma caninum [1,2].

The mature hookworms reside in the intestines of cats and dogs, and then their eggs are released into the feces. Within two days, the larvae hatch and mature to filariform (third stage) larvae which are infective to other hosts. The infected cats and dogs usually defecate in sandpits, seashore, or areas with loose, wet soils where also being the natural environments for the larvae. Human is the dead-end hosts that the filariform larvae in humans are not capable of maturation. The larvae keep moving approximately 2 – 3 cm/day. During its migration, an itchy erythematous. CLM is a self-limiting disease, the spontaneous resolution coming up within a few weeks. But most patients used to receive anti-parasite therapy, such as Albendazole or Ivermectin.

1. Introduction
Cutaneous Larva Migrans (CLM) is one of the most helminthic skin infestations, frequently in tropical and subtropical countries, including the Southeastern United States, Central, and South America, Southeast Asia, and Africa. CLM was first described in 1874 by Lee who named this dermatitis as "creeping eruption." Then, in 1893, Crocker introduced the term of "larva migrans." CLM is caused by the larvae of animal hookworms with the most common being Ancylostoma braziliense and Ancylostoma caninum [1,2].

The mature hookworms reside in the intestines of cats and dogs, and then their eggs are released into the feces. Within two days, the larvae hatch and mature to filariform (third stage) larvae which are infective to other hosts. The infected cats and dogs usually defecate in sandpits, seashore, or areas with loose, wet soils where also being the natural environments for the larvae. Humans are the dead-end hosts that the filariform larvae in humans are not capable of maturation. So that, people who had previous contact with such soil –such as gardeners, hunters, children who play in sandpits, and people who frequently visit the beaches –are the ones affected. Moreover, the poor hygiene increases the risk to be infected. The larvae enter into dermis or epidermis and migrate subcutaneously. Infection is the hands, feet, buttocks, and back. The larvae usually are not able to penetrate the basal membrane; therefore CLM is a self-limiting disease, as the larvae remain confined to the epidermis [1,3,4].

The larvae can either stay inactive for some months or migrate immediately. While the larvae were migrating, they keep moving approximately 2 – 3 cm/day. The migration tunnels along the
disorganized zone, forming reddish-brown, coiled and threadlike eruptions. During the migration, an itchy erythematous cord develops under the skin as the first manifestation of CLM. The intensity of pruritus and symptoms duration are variable. The patients often scratch the eruption, so that secondary bacterial infection in the skin probably occurs because of it [3-6].

As CLM is a self-limiting disease, the spontaneous resolution coming up within a few weeks. The period of resolution depends on the species of larvae. However, most patients used to receive antiparasite therapy, such as Albendazole or Ivermectin. Moreover, the symptom of itching sensation should be relieved by antihistamine or topical corticosteroid. Antibiotics should be given additionally due to secondary bacterial infection. Sometimes, the patients with CLM should undergo cryotherapy or CO₂ laser to destroy the larvae [5,6].

2. Case Report
A 43-years-old male, who came to Amplas Community Health Centre—a primary health-care in Medan, Indonesia—presented with an itchy eruption on the anteromedial side of the left thigh for a week. The lesion was erythematous. First, the eruption was only a small papule which was about 2 cm. Then, it subsequently progressed in more extended serpiginous fashion. The patient felt that the lesion was a moving bug in his skin. Because it was very itchy, the patient had ever scratched the sore.

The patient's occupation was the huckster who was selling toys. About two weeks ago, he had a history of carrying sand for building his residence and wore the short pant. He usually wore shoes while doing outdoor activities. He did not use to do gardening in his spare time. He had never either taken any medicine or consulted a doctor. The same presentation on his family previously was not found. There was no comorbid medical condition, such as diabetes mellitus and hypertension.

The clinical examination was begun by doing the vital signs with its all finding was in the normal limit. Then, it continued with inspection focusing on the lesion that revealed an erythematous and classically serpiginous linear lesion. It was a typical finding of creeping eruption—cutaneous larva migrans. Moreover, the lesion was slightly elevated with its width about 0,2 cm and its length about 9 cm. It located on the anteromedial side of the left thigh. The patient denied tenderness on palpation. The sign of a secondary bacterial infection was not found (figure 1). Any additional test was not checked. Then, the diagnosis of cutaneous larva migrans was established based on the history and the clinical examination.

The patient has treated with Albendazole 400 mg orally once a day for 3-days. The patient was also suggested to wear a long shirt, trousers, and shoes whenever doing the activity with soil-contact to prevent the recurrence of CLM. On follow up after three days, the lesion showed partial regression. In the 7-days following up by the phone, the patient stated that the lesion resolved completely. Then, there was no recurrence seen at two weeks follow up visit.

3. Discussions
There are many other terminologies of Cutaneous Larva Migrans (CLM), including creeping eruption, plumber’s itch, duck-hunter’s itch, and sand-worm eruption. Larvae of the hookworms use their protease and hyaluronidase to penetrate the human skin through follicles, fissures, or intact skin. However, the larvae lack the collagenase enzymes needed to penetrate to the deeper layer of the dermis and reach the blood and lymph system to complete the life cycle in the intestine like they do in the animal host, such as cat or dog. Moreover, most of the larvae are not able to survive long and die in subcutaneous tissue within 2 – 8 weeks. That is why CLM is a self-limiting disease [6-8].

Many studies from Western countries showed that the hookworm-infected the tourists from tropical areas. Furthermore, in spite of the worldwide distribution of hookworm, but the incidence of CLM is higher in the tropical and subtropical areas, especially in the economically deprived communities. The infection is fewer in temperate countries, although some cases reported from Europe, North America, and New Zealand [1,9].

Activities related to the contact with sandpits, seashore, or areas with loose, wet soils are the risk of infestation. Anyone who walks through contaminated areas barefoot or with open-type foot, or sits in tainted soil and sand, is often getting infected by the hookworms. The outdoor activities are quietly related to sanitary and socio-demographics. Besides the activities, the favorable climates also
influence the development and transmission of the hookworms—larvae. The development of larvae is enhanced by high soil moisture and atmospheric humidity. Based on some studies, the climate has an impact on soil-transmitted helminthiases (STHs)—whose dispersive forms exist in the soil. Furthermore, rain disperses larvae and eggs over the soil surface. Because of that, the risk of hookworm transmission is getting increased. Port the entry in human skin is hair follicle. The incubation period varies between 1 – 6 days [6,7,9-11].

Figure 1.

The incidence of CLM is mainly dependent on environmental and behavioral factors as it was previously explained. But, gender may determine the incidence. In this case report, the patient was a male. Many studies showed that males have the higher risk to get infected than the females do. Furthermore, a longitudinal study showed that the risk of CLM was three times higher in males than in females. The gender-related behavioral patterns, especially related to spend more time on outdoor activities, can be the reason why men more likely getting infected. The behavioral patterns included more often walking barefoot, working with the soil-contact or playing in the sandy soil [9,12].

The doctors sometimes misdiagnosed this disease unless the doctors know well the character of the lesion. They interpret the lesion to be the fungal infection or inflammatory skin disease. Indeed, the data of traveler who had the history of CLM shows that 22% until 58% are misdiagnosed or inappropriately treated [5,6,11]. The patient of this case report had no history walking barefoot, yet the risk on him was the contact with the sand while building his residence. Thus, it is essential to keep asking much information to confirm the diagnosis. As said before, diagnosis of CLM can be established by the only clinical presentation. Although the larvae are unable to penetrate the deeper layer, yet it can creep or wander within the epidermis, hence the patient could feel the moving sensation in his skin.

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The onset of manifestation can be seen in next seven days after the contact. Another study stated that in rare circumstance, the incubation period could take a long time until beyond one month. Some case reported about the extremely long incubation period lasting in 4 – 7 months. There has not been any explanation for the incubation variability. But, undetermined host factor and helminth strain differences probably play a role. After the incubation period, the larvae migrate freely and cause the formation of papules which are erythematous, slightly raised, and serpiginous. The serpiginous track is accompanied with itchy sensation. The intensity of itching can be progressive and somehow become very painful. Scratching it may let secondary bacterial infection developing. The pruritic serpiginous track is pathognomonic for this dermatitis. The size of the lesion is variable with the width is about 1 – 4 mm and the length highly varies which can be 20 cm. Sites of predilection include the ankles, feet, legs, buttock, and thigh. Besides those sites, there is a possibility for other unusual sides, such as the face, scalp, oral cavity, genitalia, and perianal area [4,9,13,14].

About a week after the contact of sand, the patient on this case realized the pruritic serpiginous track on his left thigh because of the itchy sensation which disturbed him. First, the length of the track was about 2 cm, then it intensely progressed, and seven days later when he was admitted to Amplas Community Health Centre, the lesion was reached to 9 cm. The width was stable about 2 mm.

In case of the diseases is not treated, the eruption can last in two until eight weeks or probably longer. A case was reported that an active CLM continued until two years. Being treated with Albendazole orally as anti-helminthic, the patient stated that it successfully made partial regression in 3 days followed by being completely resolved in 7 days. Besides making the lesion disappeared, anti-helminthic could lessen the pruritic symptom within one or two days of preliminary treatment. Even, a study stated that effective treatment could make the pruritus seemed to disappear sooner than the lesion. Another drug that is as effective as Albendazole is Ivermectin orally with a single dose of 200µg/kg bodyweight. Ivermectin is commonly given in many other countries, even the first-line therapy to treat patients with CLM. Meanwhile, unfortunately, this drug is rarely available in many community health centers in Indonesia. So that, patients with CLM is mainly treated with Albendazole [6,9,15].

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