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MULTIPLE MANIFESTATIONS OF CUTANEOUS LARVA MIGRANS: A CASE REPORT

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ABSTRACT
Cutaneous larva migrans (CLM) is an infectious disease caused by hookworm larvae that live in animals where infected humans are the final hosts. Clinical symptoms are found serpiginous lesions accompanied by pruritus. Multiple manifestations of cutaneous larva migrans on the skin can occur, but such cases are infrequently reported. This article describes a case report that provides a detailed diagnosis, therapeutic approach, and follow-up care of a patient. A 44-year-old man presented with the primary complaint of multiple reddish bumps and raised skin lesions that spread in a winding pattern, accompanied by itching on the abdomen for the past week after he did physical activities by crawling on the ground without wearing clothes. The onset was marked by small reddish bumps on the abdomen, along with constant itching. Then the reddish bumps lengthened, spread to form winding lesions and left blackish spots. The patient was treated with albendazole 400 mg orally once a day for 7 days and cetirizine 10 mg once a day (at night) to relieve itching, and fusidic acid cream 2x1 in the area of the scratch wound. An evaluation was conducted after 7 days of treatment by assessing the clinical signs and the patient's complaints. The itching had decreased, and the rash appeared to be drying and shows good responses. The patient's history and dermatological examination led to the diagnosis of cutaneous larva migrans with multiple manifestations. Administering antihelminthic medication can speed up the progression of the illness and prevent potential complications. Topical or systemic treatment results in a cure rate approaching 100%. Early and appropriate identification and management can help prevent complications and recurrence.

Keywords: antihelminthic; cutaneous larva migrans; hookworm larvae

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INTRODUCTION

Cutaneous larva migrans (CLM), also referred as creeping eruption and epidermatitis linearis migrans, is an infectious disease that is ultimately caused by humans who are infected with hookworm larvae such as ancylostoma caninum, uncinaria stenocephala, and bunostomum phlebotomum. These larvae live in animals. (Heukelbach & Feldmeier, 2008; Bowman et al., 2010; Vanhaecke et al., 2014; Suh & Keystone, 2019).Cutaneous larva migrans disease is widespread in low-income communities and tropical and subtropical countries, where it can infect up to 8% of the population in at-risk groups. (Reichert et al., 2018; Leung et al., 2017) Geographic regions with warm climates and high humidity are endemic for CLM, especially during the rainy season when the risk of infestation is 15 times higher. (Leung et al., 2017) At-risk groups include those who have jobs or hobbies that expose them to warm, moist, sandy soil without wearing shoes and patients with poor hygiene. All age groups, genders and races can be infected with CLM if they have been exposed to the worm larvae. (Sakina & Darlan, 2019; Suh & Keystone, 2019).

Hookworm eggs in the host's feces hatch into larvae that develop into the infective stage (filariform larvae) in the soil or sand. If the definitive host is exposed through skin contact with the larvae, the larvae will penetrate the skin which will then cause lesions and symptoms. In adult dogs, most infective larvae infect the digestive tract, can develop into adult worms and when they lay eggs will be excreted in the feces. (Bowman et al., 2010).

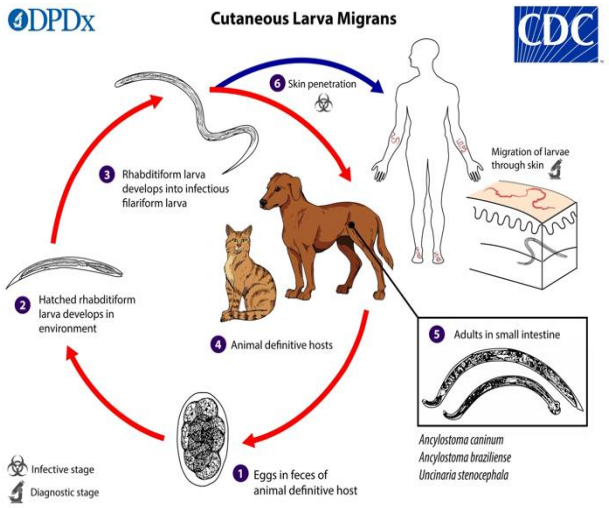

Figure 1. Life cycle of worms that cause Cutaneous Larva Migrans.[8]

Clinical symptoms generally appear within 1-5 days after exposure in the form of erythematous plaques, linear and serpiginous vesicular. The lesion is about 3 mm wide and 15-20 cm long. Lesions can be single or multiple and itchy and even painful. An infected person will experience pruritus that becomes increasingly intense. Studies in endemic areas show that 81% of patients report sleep disturbances due to severe pruritus. (Bowman et al., 2010; Sakina & Darlan, 2019; Rodriguez-Morales et al., 2021). Over time, due to scratching, the lesions tend to become superinfected with pathogenic bacteria. Lesions may develop into vesicobullous or bullous lesions measuring in several centimeters. Infection of hair follicles may progress to folliculitis. The larvae migrates at an average of 2.7 mm per day. The most commonly affected areas include the feet, legs, thighs, and buttocks, but any part of the body that contacted with contaminated soil or sand may be affected. Migratory lesions may be caused by multiple worms. Migratory lesions may be linear (serpiginous) or may be poorly defined areas of erythema and swelling, and may be painless, tender, or pruritic. (Suh & Keystone, 2019)

The diagnosis is usually supported by a recent travel history and possible exposure to animals such as dogs and cats or a history of exposure to soil without wearing shoes. Clinical symptoms are found serpiginous lesions accompanied by pruritus. Blood tests are usually normal or eosinophilia can be found. On histopathological examination larvae can be found in the tunnels in the epidermis. Cutaneous Larva Migrans is a disease that can heal itself, but it takes a long time. Complications such as secondary infections and pruritus symptoms usually cause patients to seek treatment. Treatments that can be given include albendazole, ivermectin and actions such as cryosurgery and excision surgery. (Bowman et al., 2010) This case report of a man with multiple manifestations of cutaneous larva migrans can raise awareness and provide further insight into hookworm infections, which are often neglected but can lead to serious complications if left untreated.

METHOD

This article describes a case report that provides a detailed diagnosis, therapeutic approach, and follow-up care of a patient. Case reports are frequently presented as narratives and can serve as fundamental contributions in the field of medicine. This case report presents a male patient with multiple hookworm infestation across his body. The following criteria were used to define this case: uniqueness of the case, a case that is frequently neglected, and significant clinical implications. Case reports describe and analyze individual cases, offering new insights into medical practice. The data were compiled to document unusual or rare events and capture unexpected findings that could offer additional knowledge. A critical evaluation of the case report was performed to assess the validity and reliability of the findings and to identify any limitations of the study.

RESULT

Case description, diagnosis, management, and evaluation.

A 44-year-old man, Bataknesse, working as a TNI, came for treatment to the Dermatology and Venereology Polyclinic of FL Tobing Hospital, Sibolga with the main complaint of multiple reddish bumps and skin elevations that spread, winding accompanied by itching on the stomach since 1 week ago. The patient said the complaint occurred after the patient did physical exercise activities crawling on the ground without wearing clothes. Initially, small reddish bumps appeared on the stomach accompanied by continuous itching. Then the reddish bumps lengthened, spread to form winding lesions and left blackish spots. One week ago, the reddish bumps got longer and felt increasingly itchy so the patient decided to seek treatment. The patient has never treated this complaints. The patient admitted that he did not have pets such as dogs and cats and did not have contact with these animals. The patient's family history of experiencing diseases like the patient was not found.On physical examination, blood pressure was 120/80 mmHg, respiratory rate 22x/minute, pulse rate 85x/minute, temperature 36.8 ^{o}C and general status within normal limits. On dermatological examination, multiple erythematous papular lesions and hyperpigmentation were found, linear, winding, serpiginous, accompanied by erosion in the abdominal region (Figure 1). The patient was differentially diagnosed with cutaneous larva migrans (CLM), larva currens, and scabies. The working diagnosis in the patient was multiple manifestations of cutaneous larva migrans (CLM).

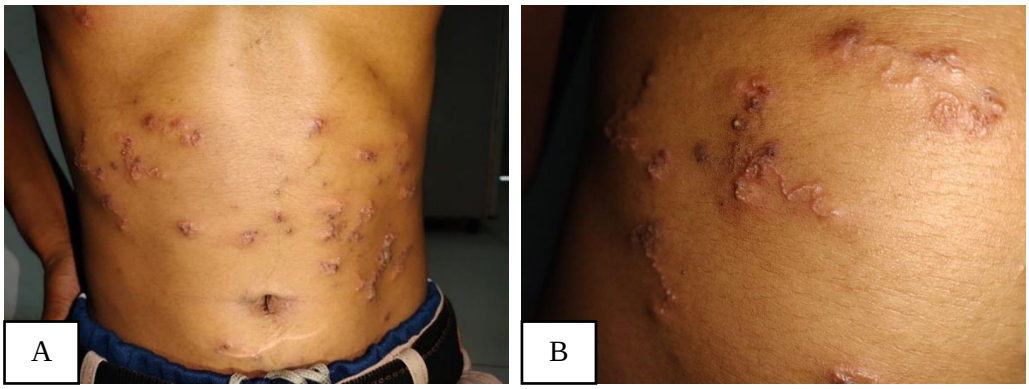

Figure 1.Dermatological examination when the patient first arrives. There are multiple erythematous papular lesions and hyperpigmentation, linear in a serpiginous arrangement accompanied by erosion in the abdominal region (A,B).

The patient was treated with albendazole 400 mg orally once a day for 7 days and cetirizine 10 mg once a day (at night) to relieve itching, and fusidic acid cream 2x1 in the area of the scratch wound. The patient was educated not to scratch the lesion area, avoid physical exercise activities during treatment, and maintain personal hygiene. The patient was advised to come back one week later.The first control, on the 7th day after treatment, it was found that

the reddish papules had decreased and dried up and there were no new papul, but there was still itching that came and went. Dermatological examination found linear, winding hyperpigmented papules and macules, accompanied by scales and crusts in the abdominal region (Figure 2). The patient was given cetirizine 10 mg once a day and desoximetasone cream twice a day.

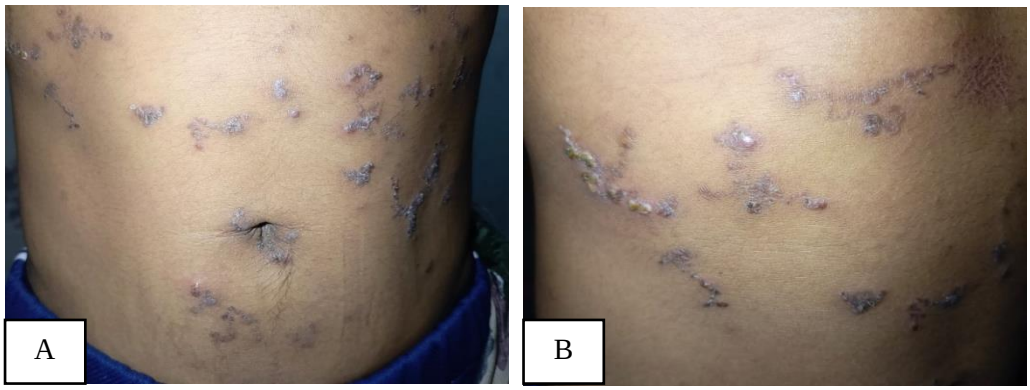

Figure 2. Hyperpigmented papules and macules in a linear, winding shape, accompanied by scales and crusts in the abdominal region (A,B).

The patient came for a second check-up after 2 weeks of treatment, no new lesions were found, and the patient no longer felt itching in the previous lesion area. Dermatological examination found post-inflammatory hyperpigmentation macules and papules in the abdominal region that had decreased (Figure 3). The patient was treated with desoximetasone cream twice a day. The prognosis for this patient is quo ad vitam bonam, quo ad sanationam bonam, and quo ad functionam bonam.

Figure 3. Post-inflammatory hyperpigmented papules and macules are in linear and winding shape, in the abdominal region.

DISCUSSION

A 44-year-old man came with complaint of reddish bumps and skin elevations that spread, winding and itchy on the stomach since 1 week ago. Initially, the patient said that the complaint appeared after doing physical exercise activities crawling on the ground without wearing clothes. According to the literature, CLM infection is said to be caused by hookworm eggs (ancylostoma caninum and ancylostoma braziliense) in cat or dog feces on contaminated soil or sand, the eggs then develop into infective larvae (filariform larvae). After human skin comes into contact with soil or sand contaminated with the larvae, the larvae will penetrate

into the epidermis of human skin. Predilection generally occurs in the extremities. After that the larvae will migrate along the skin which will cause symptoms such as blisters, redness, winding spreading lesions accompanied by itching, heat or pain. If scratched, secondary infections can occur. Groups at risk include those who have jobs or hobbies that expose them to warm and moist soil without wearing shoes. (Reichert et al., 2018; ; Suh & Keystone, 2019; Rodriguez-Morales et al., 2021; Diemert, 2011).

Pruritus in CLM occurs within one hour after penetration of a single ancylostoma braziliense larva, while typical lesions appear after several days. (Karthikeyan & Thappa., 2002) Typical skin lesions appear 1–5 days after exposure, in the form of erythematous, elevated, and vesicular papules, linear, or serpiginous. In more than 15% of CLM patients, vesicular or bullous lesions are visible at the location of larval skin penetration. Lesions can range in length from 15 to 20 cm and are typically 3 mm broad. They can also be single or many, with very intense pruritus, and may be accompanied by pain (Suh & Keystone., 2019). As a result of intense pruritus, patients will often scratch so that secondary infections can occur due to scratching wounds.(Leung et al., 2017) In this case, the results of dermatological examination found multiple erythematous papules, linear in a tortuous shape arranged in serpiginous accompanied by hyperpigmented macules and crusts in the abdominal region.The patient was differentially diagnosed with CLM, larva currens, and scabies. Larva currens, or strongyloidiasis, is a disease caused by Strongyloides stercoralis infection and is characterized by urticarial or maculopapular eruptions that migrate rapidly in a linear or serpiginous pattern, often accompanied by urticaria. The eruption usually begins in the perineal region and spreads to the buttocks and thighs. The larvae migrate at a speed of 5–15 cm per hour, hence the name "running larvae." In routine stool examinations, larvae or eggs of Strongyloides stercoralis may be detected (Borda et al., 2017; Podder et al., 2016; Downing & Tyring, 2016).

Scabies presents with white or gray tunnels (canaliculi) accompanied by intense nocturnal pruritus. It typically affects certain areas of the skin such as between the fingers, volar wrists, armpits, abdomen, scrotum, and buttocks. The shape and length of the burrows in scabies differ from the lesions seen in CLM (Rodriguez-Morales et al., 2021; Borda et al., 2017; Boerdiadja & Handoko, 2016).The patient's diagnosis is CLM based on the presence of multiple erythematous papular lesions in a linear, serpiginous shape accompanied by itching. In addition, there is a history of the patient doing physical exercise activities crawling on the ground without wearing a shirt which increases exposure risk. The diagnosis of CLM is typically made through clinical history and physical examination. Supporting investigations such as blood tests and biopsies are usually not required. A skin biopsy may show eosinophilic infiltration, but larvae are rarely visualized (Reichert et al., 2018; Bowman et al., 2010; Rodriguez-Morales et al., 2021; Upendra et al., 2013; Tianyi et al., 2018). Reports suggest that multiple lesions in CLM patients are caused by a large area of skin being exposed to multiple larvae, resulting in numerous entry points (Borda et al., 2017).

Management of the patient in this case report is by using albendazole tablets 400 mg orally once a day for 7 days and cetirizine 10 mg once a day at night to relieve itching. The patient was given education to maintain cleanliness, use personal protective equipment when coming into contact with the environment such as closed sandals and gloves and avoid exposure to dogs and cats and bathe 2 times a day with soap. Ivermectin and albendazole are considered the first-line systemic therapies for cases involving multiple lesions or severe infestation. Oral albendazole 400 mg daily for 7 to 10 days is effective, with cure rates approaching 100%. Studies have demonstrated that a 7-day albendazole regimen can reduce disease recurrence (Kincaid et al., 2015). Although CLM can resolve spontaneously, treatment is often warranted due to significant pruritus. Since the larvae cannot develop fully in humans, they eventually die within the epidermis over a span of weeks to months. Treatment options that can shorten

symptom duration include albendazole, single-dose oral ivermectin, topical thiabendazole, and cryotherapy (Maxfield & Crane, 2022; Lander et al., 2019).

Albendazole remains an effective antihelminthic drug for eradicating larvae. Other known anthelmintics include piperazine, levamisole, pyrantel pamoate, oxantel-pyrantel pamoate, and mebendazole. These medications are generally effective across various stages of worm development (eggs, larvae, adults), with broad-spectrum efficacy and minimal side effects. To reduce pruritus, oral antihistamines can be prescribed. Preventive measures should include avoiding direct contact with contaminated soil or sand (Leung et al., 2017; Rodriguez-Morales et al., 2021; Borda et al., 2017).Certain older therapies are no longer recommended, such as ethyl chloride spray and CO2 snow (dry ice) cryotherapy. These methods are ineffective because the exact location of the larvae is difficult to pinpoint, and the larvae may survive the procedure (Borda et al., 2017; Downing & Tyring, 2016; Suh & Keystone, 2019). CLM is ultimately a self-limiting disease, as the larvae cannot complete their lifecycle or penetrate deeper tissues, leading to their death in the epidermis after several weeks or months (Reichert et al., 2018; Rodriguez-Morales et al., 2021). Nonetheless, administering antihelminthic therapy can hasten recovery and prevent complications. Common complications include secondary infections, while allergic reactions, edema, and vesicobullous lesions are rarely observed (Suh & Keystone, 2019).

The prognosis for this patient is : quo ad vitam bonam, quo ad sanationam bonam, and quo ad functionam bonam. Ancylostoma larvae typically induce CLM, which resolves within one to three months. Treatment with topical or systemic agents achieves near-complete cure rates. Early diagnosis and proper management are critical in preventing complications and recurrence (Szczecinska & Anthony, 2014).Educational measures should include wearing protective clothing, shoes, or sandals, avoiding direct contact with sand or soil, not sitting directly on the ground or using thin mats, using a mattress or chair, and regular antihelminthic treatment for household pets such as dogs and cats (Suh & Keystone, 2019).

CONCLUSION

This case report of a man with multiple lesions of cutaneous larva migrans highlights the importance of early recognition and appropriate treatment of hookworm infections. Despite being a common parasitic condition, cutaneous larva migrans is often overlooked, leading to delayed diagnosis and unnecessary suffering especially when multiple or atypical manifestations are present. The case underscores the need for increased awareness among healthcare professionals, particularly in regions where parasitic infections are prevalent. Early administration of antihelminthic therapy can significantly reduce symptoms and prevent complications, demonstrating the value of timely intervention in such cases. Furthermore, this report serves as a reminder of the potential for unusual or multiple manifestations in parasitic infections, which warrants careful clinical evaluation and management.

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