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CASE REPORT: INNOVATIVE TREATMENT OF CUTANEOUS LARVA MIGRANS MANAGEMENT

Sukmawati Tansil Tan[1], Yohanes Firmansyah[2], Yurike Indah Pratiwi[2]

[1] Department of Dermatology and Venereology, Faculty of Medicine, Tarumanagara University, Jakarta, Indonesia
Email: dr.sukmawatitansilspkk@gmail.com
[2] General Practioner, Faculty of Medicine, Tarumanagara University, Jakarta, Indonesia
Email: yohanesfirmansyah28@gmail.com

Corresponding Author: Yohanes Firmansyah, Dokter Umum, Fakultas Kedokteran, Universitas Tarumanagara
E-Mail: yohanesfirmansyah28@gmail.com

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Abstrak

Cutaneous larva migrans (CLM) is a skin infection caused by nematode larvae that penetrate actively and migrate within the epidermis of the skin. Several reports from the livestock sector report that resistance mechanisms are emerging due to the irrational use of anti-helminths. This case report describes a case of CLM that was treated with a new approach of using 5% permethrin cream topically for ten days (empirical therapy generally consists of Albendazole and Ivermectin with high resistance rates in animals). The 5% permethrin cream treatment effectively treats "creeping eruptions" with very itchy lesions on the dorsum palmar dextra with a tunnel-shaped appearance of hyperemic serpiginous papules. The patient admitted that he was delighted with the treatment without any side effects

Keywords: *creeping eruption; cutaneous larva migrans; alternative therapy; Permethrin; drug resistance*

PENDAHULUAN

Cutaneous larva migrans (CLM) is a typical clinical skin infection with the pathogenesis of active penetration and migration of nematode larvae to the epidermis. The most common larvae as the leading cause of the incidence of Cutaneous larva migrans (CLM) is Ancylostoma braziliense with the primary predilection of the limb area. [1,2]

Cutaneous larva migrans (CLM) infection is generally self-limited for 2 to 8 weeks. However, pruritus resulting from CLM is usually very severe and requires symptomatic therapy. Therapeutic options that can be used to eradicate CLM are albendazole 400 mg orally single dose in adults, 400 mg for 3 to 5 days (child's dose is 10-15 mg/kg body weight, and maximum dose of 800 mg) to increase levels. its effectiveness. [1] Other drug options to choose from are ivermectin 12 mg as a single dose (150 µg / kg in the case of children), or topical application of thiabendazole 10% to 15% three times daily for at least 15 days. [3]

Reports from the last three decades reveal that there are several types of larvae and worms that have begun to adapt and are resistant to anthelmintic drugs such as benzimidazole (BZ), levamisole (Lev), and macrolide lactones (Ivermectin). Although there have been no reports of resistance mechanisms in humans, Australia and the Bogor Agricultural Institute reveal that this resistance has been widespread among sheep farms since 1983. The reported prevalence of

anthelmintic resistance is large enough to reach 80% of sheep farms in Australia. [4]

CASE REPORT

A 37-year-old woman presented with complaints since eight days ago, she developed itching and a red, fluid-filled rash on the back of her right hand (Figure 1). The rash first appears as reddish patches with erosions around the lesions that were initially mistaken for allergic reactions or insect bites. After a few days, the lesion develops into a long, curved, protruding, and elongated curve. The patient feels a skin lesion like a worm moving on the back of the right hand. The patient's habit history is fond of gardening in the yard, and there is a history of keeping cats.

Physical examination found meandering skin lesions in a hyperemic serpiginous pattern with secondary efflorescence in the form of erosions in the right dorsum manus region (Figure 1). The results of the history and physical examination can confirm the conclusion of the diagnosis as cutaneous larva migrans. The patient agreed and signed informed consent for treatment using topical Permethrin 5% cream. The recommended way to use Permethrin 5% is to use it two times a day for ten days after bathing and drying it with a clean towel. Patients are also asked to record any side effects that arise from this therapy. The patient was scheduled for return on the tenth day with the skin lesions entirely resolved, leaving post-inflammatory hyperpigmented patches (Figure 2). The patient admitted that he was delighted with the final result of this treatment without any side effects.

Figure 1. Serpiginous lesion on dorsum manus dextra

Figure 2. Total resolution of the area on the dorsum manus sinistra by leaving post-inflammatory hyperpigmented lesions after using 5% permethrin cream for ten days

DISCUSSION

First-line CLM therapy is ivermectin (150-200 µg / kg body weight), a single dose of albendazole (400-800 mg/day) single dose given orally for three days with cure rates ranging from 94 to 100 percent. Other therapies that can be given are tiabendazole and albendazole topically, which are applied twice a day for ten days. Another invasive treatment that can be chosen is cryotherapy using liquid nitrogen and ethyl chloride, which is no longer recommended. [1] The most recent therapy for CLM management in the last two years is using ivermectin 1% cream used for 14 days with symptom remission starting to appear on the third day. [5]

Various reports describe the possible resistance of larvae and worms in livestock areas, which are becoming resistant to anthelmintic, especially benzimidazole in Australia, causing doctors to try new drugs to overcome the growing resistance problem. [6,7] (Figure 3). One of the alternative treatments used is the use of Permethrin.

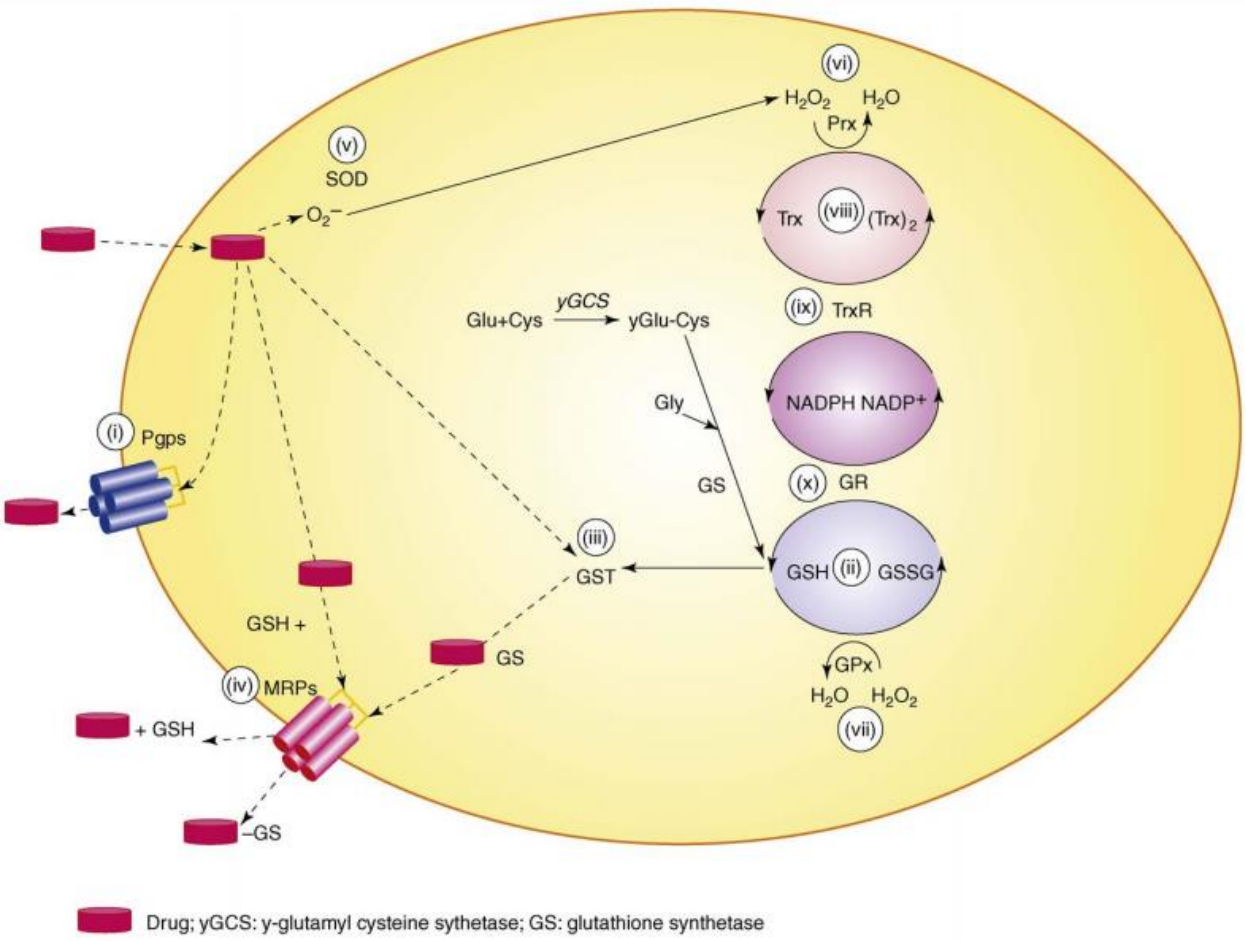

Figure 3. Response at the cellular level that impacts drug resistance (Perspectives on eukaryotic cells) [6]

Permethrin is a pyrethroid synthesis drug that is usually used to eradicate scabies and pediculosis topically, which has a successful elimination rate of 97-99%. Pyrethroids are a major class of insecticides

that are neurotoxic. A pyrethroid is a synthetic analog of the natural insecticidal ester of chrysanthemum (pyrethrin I) and pyretic acid (pyrethrin II), naturally found in Chrysanthemum cinerafolis flowers. The alcohol part of the pyrethrin group is divided into three natural variations consisting of pyrethrin I and II, jasmolin I and II, and cinerin I and II. [7,8]

The goal of the pyrethrin and pyrethroid class of drugs is to affect the peripheral and central nervous systems of the target organism. The mechanism of action of pyrethrin and pyrethroid is to stimulate nerve cells to produce repeated release (without pause) as a result of continuous open sodium channels and cause excessive reabsorption of sodium in cells with the effect in the form of damage to peripheral nerves and central nerves in the target (insects or worms) causing paralysis. This whole phase causes paralysis of the target, which is sublethal. [7]

The second phase of pyrethrin and pyrethroid is the amplitude resulting from the continuous flow of sodium, which continues without stopping causing the maximum load of cells to maintain sodium pump activity to exceed the threshold. [7] The result of this phase, coupled with higher lipophilicity, gives a better level of paralysis because the pyrethroids can penetrate to the target faster with the outcome in the form of paralysis and death in the target organism.[9,10]

Pyrethroid type I (for example, Permethrin) is a very potent numbing agent due to its ability to induce repeated firing and excitation of axons, which results in loss of consciousness, disruption of coordination between organs, and the appearance of hyperactivity in the target body with the result in the form of paralysis. heavy to death. [7,11]

In terms of the potential for drugs in causing paralysis in worms and insects, there is a more potent compound, namely, type II compounds or deltamethrin, which results in a faster seizure phase and better killing effect due to axon depolarization and irreversible damage to damaged nerve terminals. cannot be recovered. [12] Irreversible nerve terminal damage due to the duration of sodium currents modified by Type II compounds lasts several seconds (longer than type I compounds, which only last tens or hundreds of milliseconds. But type II compounds are not typical and not suitable for treatment in humans. [7]

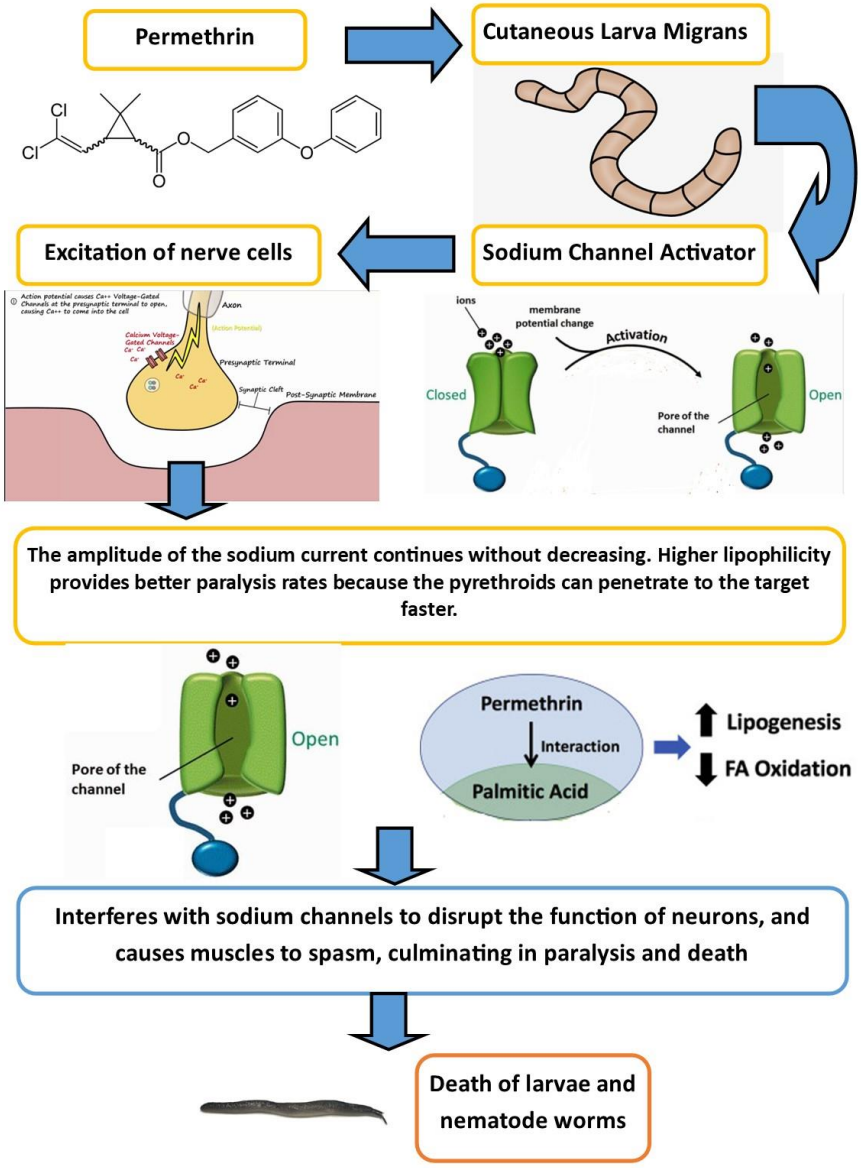

Figure 4.Permethrin mechanism in the elimination of cutaneous larva migrans (CLM) (Summary of Pathway from Sukmawati Tansil Tan)

SIMPULAN

Cutaneous larva migrans (CLM) is a skin infection that results from active penetration and migration of filariform larvae in the inner layer of the skin epidermis. One case of CLM was reported in a 37-year-old woman with a skin lesion of a long, curved, protruding, and long curved skin. A new treatment innovation for CLM was implemented in this patient using topical 5% permethrin cream twice daily, limited to the lesion area for ten days. The skin lesions resolved spontaneously without any side effects, and suppose this is an easy and cheap treatment.

Conflict of Interest

The authors declared that they have no conflicts of interest.

Ethical Clearance

The intervention used in this study has obtained an ethical clearance from Universitas Tarumanagara Human Research Ethics Committee Institute of Research and Community Engagement (Register

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Consent For Publication

Completion of Author Declaration and Consent to Publish form is required at the time of submission and requires the corresponding author's affirmation that

(a) neither the article nor portions of it have been previously published elsewhere (except as an abstract or as part of a dissertation),

(b) the manuscript is not under consideration for publication in another journal, and will not be submitted elsewhere until the editorial process is completed, and

(c) all authors consent to the publication of the manuscript, should the article be accepted by the Editor-in-chief upon completion of the refereeing process.

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