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Letter to the Editor

Hookworm-related cutaneous larva migrans: our 201st patient

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Dear Editor,

During the period 1997-2015 we observed 200 patients with hookworm-related cutaneous larva migrans (HrCLM) acquired in Tropical or Subtropical countries. For all these patients we collected complete data (race, sex, age, country of infestation, location and morphology of the lesions, symptoms and therapy). Most patients were Caucasians, of both genders, with an age ranging from 25 to 60 years. HrCLM was more frequently acquired in Brazil and presented with more or less numerous and pruritic tracks. Oral albendazole was successfully used in most patients. The recent observation of our 201st patient prompted us to make a short review of the literature about this disease.

The patient was a 52-year-old Caucasian female who contracted the infestation in December 2015 during a tour in Brazil. The infestation was characterized by multiple, erythematous, slightly raised, pruritic tracks located on the left breast and back (Figure 1). The patient was successfully treated with oral albendazole (400 mg/day for seven days).

HrCLM is an infestation caused by penetration and migration of larvae of nematodes in the epidermis. *Ancylostoma braziliense* and *Ancylostoma caninum* are the species most frequently involved. Natural reservoirs of these ancylostomas are the stomach and bowel of cats and dogs. The natural environment of the larvae is the sandy, warm, damp soil.

HrCLM is characterized by erythematous and slightly raised tracks: they may be single or multiple, linear or, more frequently, serpiginous, ramified and intertwined. The length of tracks is variable (sometimes several cm); the width ranges from 1 to 4 mm. Tracks are often accompanied by pruritus. The feet and ankles are most frequently involved; other locations are the legs, knees, buttocks, abdomen and back [1].

HrCLM was first described in 1874 by Lee who named this dermatitis as a "creeping eruption" [2]. According to Muhleisen, in 1893 Crocker used, the term of "larva migrans" for the first time. However, he thought it was caused by insect larvae [3]. In 1926, Kirby Smith *et al*. [4] discovered in four patients' larvae of a nematode, that they named *Agamonematodum migrans*.

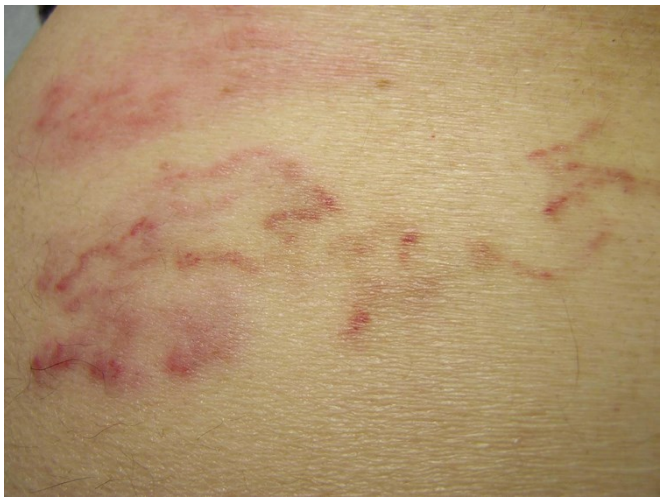
In 1928, White and Dove [5] demonstrated that third stage *Ancylostoma braziliense* larvae were responsible for the disease.

In 1929, the same authors [6] also demonstrated that *Ancylostoma caninum* larvae could cause creeping eruption.

With time, HrCLM has been referred to in numerous ways, such as *dermatite linéaire rampante*, *epidermitis linearis migrans*, ground itch, larbish, sandworm eruption, and sandworm disease as well as water dermatitis. Its current name is HrCLM. HrCLM is sometimes an occupational disease, for which the names of duckhunters' itch and plumber's itch were suggested.

HrCLM is endemic in three geographical areas: East Africa, Thailand and America (South-East United States, the Caribbean and Brazil). However, the observation of autochthonous cases in European countries is more frequent than in the past: HrCLM has been observed in United Kingdom [7], Germany [8], France [9] and Italy [10]. The first autochthonous Italian case was published in 1977 (a 34-year-old woman from Calabria, Southern Italy) [10]. The first Italian pediatric case was published in 1988: a 3-year-old male child who lived in Cagliari (Sardinia) [11].

Figure 1. HrCLM on the back.



Outbreaks of HrCLM were recorded in Nigeria, South Africa, Barbados, Belize and France. In 2002, the first autochthonous Italian outbreak was recorded in Naples [12].

Finally, the first study on epiluminescence microscopy was published in 2000 [13].

HrCLM may be a self-limiting infestation: usually, its duration ranges from 2 to 8 weeks. However, a rare variety of "chronic" or "persistent" HrCLM, characterized by a typical clinical presentation of long duration (from 5 to 14 months) has been described [14].

The therapy of HrCLM is currently based on cryotherapy [15], topical drugs (thiabendazole [16] and albendazole [17]), and oral drugs (thiabendazole [18], albendazole [19] and ivermectin [20]). The use of ethyl chloride [21] and oral diethylcarbamazine [22], stibanose [23], chloroquine [24], gamma-esachlorcycloexan [25], fluoromebendazole [26] and mebendazole [27] has been abandoned.

Cryotherapy can be used in single and small lesions. However, it is often ineffective; in addition, it can induce the formation of blisters, erosions, ulcers and scars [15].

Topical thiabendazole has been used in different concentrations (from 10 to 50%), once-three times/day, for 3 to 15 days. It is effective and safe. It may be also considered for children [16].

Literature data on topical albendazole is limited to a small number of patients, in whom it was used at a concentration of 10%, as a lotion or ointment [17].

Oral thiabendazole is effective. However, the daily dosage (20, 25 or 50 mg/kg/ day?) and the length of the therapy (1, 3 or 4 days?) have not yet established. Furthermore, side effects (nausea, abdominal pain, vomiting, headache, dizziness, hematuria) are rather common and sometimes severe [18].

Oral albendazole is used at the dosage of 400 mg/day for 1 to 7 days [19]. Regimens of 1, 3 or 5 days are often followed by partial remission or recurrence of the infestation [28, 29, 30]. A one-week duration allows a complete remission in almost all patients [28; 29; 30]. Side effects (nausea, abdominal pain, Herxheimer-like reaction, alopecia, Stevens-Johnson syndrome) are rare, mild in severity and self-healing [31].

Oral ivermectin is also effective. It can be used as a single dose, although 2-3 courses are sometimes necessary [20]. In several countries, ivermectin is on the market, yet only for use in veterinary medicine. On the other hand, 1% ivermectin cream seems to be ineffective [32].

We would recommend cryotherapy or topical thiabendazole only for single and small lesions, and oral albendazole (for one week) or ivermectin for widespread or chronic lesions or those lesions that showed to be resistant to cryotherapy or topical thiabendazole.

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