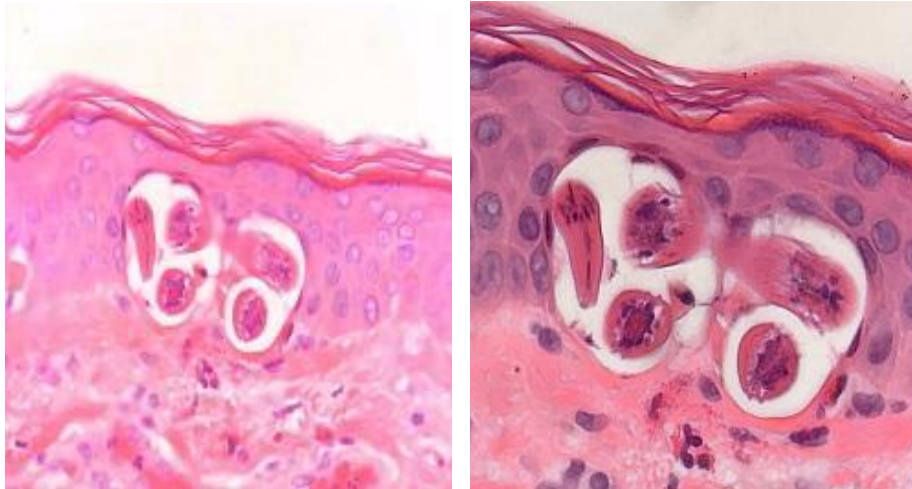


## PARASITOLOGY CASE HISTORY 21 (HISTOLOGY)

(Lynne S. Garcia)

A 61-year-old woman presented with a raised, itchy, red rash on her upper body. Over a four-month period, the rash did not respond to topical treatment. On physical examination, erythematous papular lesions were seen; biopsies were taken that revealed the following. The patient had no relevant travel history outside of the United States.



Structures measuring approximately 15-25 microns were seen, along with eosinophils.

- Based on these images, what is your diagnosis?

***Scroll Down for Answer and Discussion***

### **Answer and Discussion of Histology Quiz #21**

This represents a case of cutaneous larva migrans (CLM) or creeping eruption caused by migrating zoonotic *Ancylostoma* larvae (*A. braziliense*, *A. caninum*). Key features include the following:

- Double lateral alae (black circle), Left
- Few poorly developed platymyarian muscle cells (yellow circle), Right

- Size is consistent with *Ancylostoma* larvae
- No reproductive structures are seen, thus confirming an immature/larval stage



#### **Comments on the Method:**

In cases of cutaneous larva migrans, skin biopsies often fail to demonstrate larvae; as location of the larvae usually precedes the inflammatory tracks (site of biopsy) and finding the actual parasite often depends on chance. Diagnosis is more likely based on clinical and epidemiological evidence. Lesion characteristics vary by hookworm species and host factors; therefore, species cannot be accurately determined by clinical findings alone.

#### **Comments on the Infection:**

The most common etiologic agent of CLM in the southern United States is *Ancylostoma braziliense*, a very common hookworm of dogs and cats. *A. caninum*, the common hookworm of dogs, has been implicated in cases of

CLM. Other species are also capable of producing CLM, although they are less common than *A. braziliense*.

Human infection is acquired through skin penetration by infective larvae from the soil. These larvae can also cause infection when ingested. When larvae penetrate the skin, they produce pruritic papules, which after several days become linear tracks that are elevated and vesicular. The larva continues to migrate several centimeters each day, and the older portion of the track dries and becomes scarred. This process is associated with severe pruritus, and scratching can lead to secondary infection. Secondary bacterial infections often occur due to intense scratching of the tracks.

The larvae migrate in the epidermis just above the basal layer, and rarely penetrate the dermis. Larval secretions containing proteolytic enzymes may cause inflammatory reactions associated with intense itching as the lesion progresses. Although the larvae cannot reach the intestine to complete their life cycle in the human host, they do occasionally migrate to the lungs where they produce pulmonary infiltrates. Both larvae and eosinophils have been demonstrated in the sputum of patients with pulmonary involvement. The larvae die without reproducing, and the disease is self-limited.

### **Comments on Diagnosis:**

Diagnosis is usually based on the characteristic linear tunnels or tracks and a history of possible exposure. Biopsy is not recommended; however, if no linear tracks are visible, biopsy becomes a more routine choice. Newer PCR methods for detection and identification of larvae in human tissues may improve the test results. There may be elevated eosinophilia (peripheral or sputum).

Blood tests are not necessary for diagnosis. Eosinophilia is found in less than 40% of patients with CLM and is nonspecific. A biopsy is not recommended (poor sensitivity), and while secondary changes and infiltrates may be helpful, it is not necessary to confirm this clinical diagnosis.

Scabies, loiasis, myiasis, schistosomiasis, tinea corporis, and contact dermatitis may have some overlapping features. However, these are all easily differentiated by lack of serpentine migration. The most similar disease is the migrating lesion of *Strongyloides stercoralis*, termed larva currens.

### **References:**

1. Garcia, L.S. 2016. *Diagnostic Medical Parasitology*, 6th Ed., ASM Press, Washington, D.C.

2. Garcia, L.S. 2021. *Practical Guide to Diagnostic Parasitology*, 3rd Ed., ASM Press, Washington, D.C.