Cutaneous parasites of importance for the dermatologist

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All practicing dermatologist should be aware of parasitic infections that can present with a clinical picture of creeping eruption. The most representatives entities that can be included in this particular discussion include cutaneous larva migrans, the pattern of larva currens, gnathostomiasis, sparganosis, and more rare onchocerciasis, dracunculosis and some forms of myiasis seen in North America.

Most migratory worms are larvarial stages of nematodes or roundworms and less common, larvarial stages of cestodes, thus is, flatworms.

The first parasitic form to be discussed is cutaneous larva migrans or creeping eruption. This is the most common tropical parasitic dermatosis. Initially confined to subtropical areas and southwestern US, with increased travelling the disease it is also seen in tourist visiting sandy beaches in tropical spots.

The species most commonly associated with cutaneous larva migrans include Ancylostoma braziliensis, A. caninum, Uncinaria stenocephala and Bunostomum plebotomun. Many are parasites of cats and dogs. The eggs are excreted in the animal feces, and hatch in sandy, moist soil. When the human walks barefoot in the contaminated soil the larva will penetrate the stratum corneum and start travelling in the epidermis. In the definitive host they will be capable to penetrate the basement membrane and reach blood vessels that will allow them to complete the whole life cycle. In human, however, because the lack of specific collagenase, they will have an intraepidermal wandering course that may last for weeks, until the parasite dies. Most of the time the biopsy will show the dermal infiltrate which is perivascular and rich in eosinophils. If one finds the worm, it will be contained just at the epidermal level.

The lesions are typically located on the feet, the sole, interdigital spaces between the toes, the buttocks, hands and knees. Occasionally, rather than through the epidermis, the larva penetrates the hair follicles. The clinical rather that a creeping eruption, will be a papular eruption.

Larva currens represents the cutaneous migratory phase of strongyloidiasis. The infestation can occur by a similar mechanism as in cutaneous larva migrans (walking in contaminated sandy soil where the larva has mature toward L2 and L3 forms) but also from auto infestation through the perineal skin. In the feet or in the perineal skin, the appearance will be a creeping or extremely pruritic papular eruption, moving faster that any other parasite, up to 15 cm per hour. In the case of massive infestations, the lesions tend to be more hemorrhagic, with periumbilical petechiae and purpura, and even larger lesions, the so-called thumbprint purpura.

Strongyloides stercoralis larva produces hemorrhages in the dermis, and, in massive infections, such as in a immunosuppressed patients, HIV, HTLV-1, organ transplant, leukemia lymphoma, and
those receiving high dose steroid, the larva is seen between the collagen bundles in the reticular dermis, even in absence of any inflammatory infiltrate.

Gnathostomiasis is a emerging infectious disease, seen in specific countries where people consumes raw fish, as sushi, sashimi or ceviche or in the adventurous gourmet traveler. The infection is produced by the migration of the third larval stage of different species of *Gnathostoma*, including *G. spinigerum* and *G. binucleatum*. The L3 form is in the raw meat, and once it is liberated in the gastric cavity, it penetrates the mucosae, wanders through the peritoneal space and once it reaches the abdominal parietal peritoneum, it will travel superficially towards the skin. Once there, if it travels at the subcutaneous level, it will caused a migratory eosinophilic panniculitis, presenting clinically as a migratory nodule. If the worm gets more superficial, in the dermis, it will give a histological pattern of a interstitial eosinophilic dermatitis, with flame figures, with a clinical appearance of cutaneous larva migrans. The superficial location toward the epidermis is more common after the patient receives therapy. If the worm gets very superficial, a punch biopsy may include the whole worm or sections of it. Gnathostoma is a round worm, with a digestive tube recognizable by its particular structures.

Sparganosis is the disease caused by the sparganum, which is the migratory larval stage of a cestode, parasite of dogs and cats, by the name of *Spirometra* sp. Species known to cause disease in humans include *S. mansonoide*, *S erinaceieuropaei*, *S. houghtoni* and *S. proliferum*. The life cycle is quite similar to gnathostoma, with several potential aquatic intermediate hosts. Where in gnathostomiasis the vehicle of transmission is fish, in sparganosis is contaminated water, consumption of contaminated reptiles or frog meat, or the same meat applied as poultries over open wounds as a form of traditional medicine.

The sparganum in the skin may present as a fixed nodule or as a wandering nodules than also migrates, slowly, in a matter of weeks or months. Once the nodules is excised, it will show a eosinophilic panniculitis with a visible tract. The worm pieces will be seen as an amorphous structure, elongated structure, 0.5 cm up in diameter, and 0.5 to 30 cm. in length, whitish, seen with the naked eye. If the cephalic pole is seen, it will look dilated and bulbous (the bothrium). The worm is a cestode, thus is, it lack a digestive tube. Instead, the stroma is lax, with amorphous excretory channels, calcareous bodies and an external wall that include a cuticle, a muscular layers and columnar cells.

Reference
