Hookworm Infection



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Characteristics

Necator Americanus

Ned-castor American-flag

Necator americanus is a human hookworm. It has hook-like mouthparts with which it attaches to the intestinal wall of the host and ingest blood, causing microcytic anemia. It is commonly found in North and South America, central Africa, Indonesia, islands of the South Pacific and India. Due to its dermal penetration, it can cause cutaneous symptoms such as maculopapular rash at the site of larval entry. A common risk factor is walking barefoot in contaminated soil.

Ancylostoma spp

Anchor-worm-man

Ancylostoma duodenale and Necator americanus are human hookworms. Hookworms are a group of parasitic nematodes (roundworms) that uses hook-like mouthparts to attach to the intestinal wall and ingest blood. Ancylostoma duodenale is commonly found in Mediterranean countries, Iran, Pakistan and the Far East.

Nematode (Roundworm)

Knee-toad with Roundworms

Nematodes are a class of worms that includes hookworms. They can cause intestinal, skin, and systemic infections.

Mode of transmission

Larvae in Soil Penetrate Skin

Larvae in Soil Penetrating Skin

Hookworms mode of transmission is primarily via percutaneous penetration of larvae, mainly via the feet. Hookwom infection usually occurs in warm, moist climates such as in the tropics and a risk factor is walking barefoot on contaminated ground, like soil or beaches. The cutaneous entry may cause symptoms such as pruritus, erythema, maculopapular rash and occasionally serpiginous marks in the skin which represent larval tracks.

Pathophysiology

Larvae Migrate To Lungs

Larvae in lungs

Once larvae have penetrated, they migrate to the lungs via blood and lymphatic vessels. In the lungs, they migrate to the larynx. Larvae are then expectorated and swallowed back into the intestine. It is in the intestines where the larvae mature into adult worms.

Larvae Mature In The Intestine

Big larva in intestine

After the larvae have reached the lungs, they are expectorated and swallowed back into the intestines. This is important in the disease process since it is in the intestines where the larvae mature into adult worms and cause the main symptoms. Here they colonize the intestinal tract and female hookworms lay eggs in the intestines that are eliminated with the feces.

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Risk Factors

Walking Barefoot On Contaminated Ground

Bear-footprints on the Ground

Since its mode of transmission is through penetration of the skin, a risk factor is to walk barefoot on contaminated beaches.

Signs & Symptoms

Cutaneous Symptoms

Skin with larva

The cutaneous entry of the larva can be characterized by signs and symptoms such as pruritus, erythema, maculopapular rash and in some occasions serpiginous marks in the skin representing larval tracks.

Microcytic Anemia

Anemone

Hookworms can cause microcytic anemia by sucking blood from the intestinal wall of the host. Other intestinal symptoms include abdominal pain, weight loss, nausea, vomiting, and diarrhea.

Treatment

Albendazole

Abe-Bond

Bendazoles such as albendazole, work by inhibiting glycogen metabolism in worms, starving them to death. They are indicated in the treatment of human hookworms infections such as Necator americanus.

Pyrantel Pamoate

Pirate Pomeranian

Pyrantel pamoate is an anthelmintic agent that is used to treat certain worm infections, among which is hookworms infections. It acts as a depolarizing neuromuscular blocker, resulting in paralysis of the parasites, which are subsequently passed in the stool.

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