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COMMUNITY HEALTH NURSING

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Helminthic infection

Helminthiasis, also known as worm infection, is any macroparasitic disease of humans and other animals in which a part of the body is infected with parasitic worms, known as helminths.Adults can generally be seen with the naked eye. Many are intestinal worms that are soil-transmitted and infect the gastrointestinal tract. Other parasitic worms such as schistosomes reside in blood vessels.

TYPES OF PARASITIC HELMINTHS

The parasitic intestinal helminths can be divided into three groups which include:-

- Nematodes (roundworms)

_Cestodes (tapeworms)

- Trematodes (flukes). Helminths share numerous characteristics that contribute to their parasitic quality including the presence of attachment organs.

Mode of transmission

Helminthics are transmitted to humans in many different ways. The simplest is by accidental ingestion of infective eggs (Ascaris, Echinococcus, Enterobius, Trichuris) or larvae (some hookworms). Other worms have larvae that actively penetrate the skin (hookworms, schistosomes, Strongyloides).

Classification of helminthic

The helminths are worm-like parasites. The clinically relevant groups are separated according to their general external shape and the host organ they inhabit. There are both hermaphroditic and bisexual species. The definitive classification is based on the external and internal morphology of egg, larval, and adult stages.

Flukes (Trematodes) :Adult flukes are leaf-shaped flatworms. Prominent oral and ventral suckers help maintain position in situ. Flukes are hermaphroditic except for blood flukes, which are bisexual. The life-cycle includes a snail intermediate host.

Tapeworms (Cestodes): Adult tapeworms are elongated, segmented, hermaphroditic flatworms that inhabit the intestinal lumen. Larval forms, which are cystic or solid, inhabit extraintestinal tissues.

-Roundworms (nematodes) a):Are worms with long round body. They vary in length from several millimetres to up to two metres. Roundworms are common in warm tropical countries. Children are

more often affected than adults. Treatment is usually very effective but wiping out (eradication of) roundworm infections has proved to be very difficult.

Adult and larval roundworms are bisexual, cylindrical worms. They inhabit intestinal and extraintestinal sites.

Features of Roundworms

Unlike the flatworms, the roundworms have a body cavity with internal organs.

A roundworm has a complete digestive system, which includes both a mouth and an anus. ...

Roundworms also have a simple nervous system with a primitive brain.

Medically important nematodes.

Nematodes (or round worms) can be divided into intestinal and tissue dwellers.

Intestinal nematodes that are human parasites include Enterobius, Trichuris, Ascaris, Ancylostoma, Necator and Strongy1oides.

Tissue nematodes include members of the family Filarioidea (Wuchereria bancrofti, Brugia malayi, Loa loa, Onchocerca volvulus).

Animal parasites that can cause human disease are Capillaria, Anisakis, Toxocara, and Ancylostoma brazilienses, but cannot complete their life cycle in the human host.

(1) ASCARIS LUMBRICOIDES

Ascaris lumbricoides is the "large roundworm" of humans, growing to a length of up to 35 cm. It is one of several species of Ascaris. An ascarid nematode of the phylum Nematoda, it is the most common parasitic worm in humans.

However, parasitic worm infections are not as common in the United States, according to the Centers for Disease Control and PreventionTrusted Source.

Ascariasis is most common in places without modern sanitation. People get the parasite through unsafe food and water. The infection usually causes no symptoms, but a high number of roundworms (heavier infestations) can lead to problems in the lungs or intestines.

Scientific name: Ascaris lumbricoides

Class: Chromadorea

Kingdom: Animalia

Rank: Species

Phylum: Nematoda

Ascaris lumbricoidesis the largest and, globally, the most widespread of all human intestinal roundworms (Nematode).

Life cycle:

Human is the definitive host. There is no intermediate host

Tramission is human - feces - human

Adult ascaris live in the small intestines.Females produce 200 000 eggs per day. Eggs are deposited in the lumen, passed in feces, and must embryonate for 3 weeks in the soil before becoming infectious.

Ingestion of infective eggs by another human from contaminated soil results in infection.

After ingestion, the hatched larvae penetrate intestinal mucosa and invade portal venules.

They are carried to the liver, and travel via the hepatic vein to the right heart and into the lungs.

Larvae enlarge and rupture into alveoli, are coughed up and subsequently swallowed.

Upon reaching the small intestine, they mature, mate and deposit eggs.

If the infection is untreated, adult worms can live for 12 to 18 months, resulting in daily excretion of large numbers of ova.

Incubation period :-The incubation period is prolonged. The interval between ingestion of the egg and the development of egg-laying adults is approximately 8 weeks.

Epidemiology: Infection with A lumbricoides is ubiquitous but is most common in the tropics, in areas of poor sanitation, and wherever human feces are used as fertilizer.

SIGN AND SYMTOMS

-Nausea.

-Vomiting.

-Irregular stools or diarrhea.

-Intestinal blockage, which causes severe pain and vomiting.

-Loss of appetite.

-Visible worms in the stool.

-Abdominal discomfort or pain.

-Weigh loss

Clinical Manifestations:

Most infections are asymptomatic, although nonspecific gastrointestinal tract symptoms may occur in some patients.

-Pulmonary involvement . During the larval migratory phase, an acute transient pneumonitis (Loffler syndrome) associated with fever, cough and wheezing (hypersensitivity) and marked eosinophilia may occur.

Heavy worm loads can lead

-Acute intestinal obstruction may develop in patients with heavy infections.

-Children are more prone to this complication because of the smaller diameters of the intestinal lumen and heavy worm burden.

-To obstruction of appendix . Ascaris lumbricoides has been found in the appendiceal lumen in patients with acute appendicitis, but a causal relationship is uncertain.

-The adult worms can be stimulated to migrate by stressful conditions (eg, fever, illness, or anesthesia) and by some antihelmintic drugs.

-Worm migration can cause peritonitis, secondary to intestinal wall penetration

Common bile duct obstruction resulting in acute obstructive jaundice.

Diagnostic Tests:

-The diagnosis is established by finding characteristic eggs in the feces.

Eggs are elliptical in shape, measure 30 by 50 pm, and have a rough, wavy, albuminous coat over their shell.

They are highly resistant and may remain viable up to 6 years.

-The pulmonary phase may be diagnosed by finding larvae and eosinophils in sputum. _Occasionally, patients pass adult worms from the rectum ,the nose following migration through the nares in febrile patients and the mouth in vomitus.

-Can also be recognized with barium studies

The differential when the worm is visible to the naked eye

Ascaris lumbricoides is the largest and most common of the intestinal helminths, and measure 1.5-3 cm in length.

Treatment:

Mebendazole and Pyrantel pamoate are highly effective. Mebendazole is preferred if Trichuris trichiura is also present.

Pyrantel pamoate in a single dose, albendazole in a single dose, or mebendazole for 3 days is recommended for treatment of asymptomatic and symptomatic infections.

Piperazine paralyzes the worms, allowing them to be excreted with intestinal peristalsis.

Piperazine should not be used with pyrantel pamoate because the two drugs are antagonistic.

Re -examination of stool specimens 3 weeks after therapy to determine whether the worms have been eliminated is helpful for assessing therapy but is not essential.

In cases of partial or complete intestinal obstruction due to a heavy worm load:

piperazine citrate solution (75 mg/kg per day, not to exceed 3.5 g) may be given through a gastrointestinal tube.

Surgical intervention occasionally is necessary to relieve intestinal or biliary obstruction, or for volvulus or peritonitis secondary to perforation.

If surgery is performed for intestinal obstruction, massaging the bowel to eliminate the obstruction is preferable to incision of the intestine

Control Measures:

Standard precautions are recommended.

-Sanitary disposal of human feces stops transmission.

-Children's play areas should be given special attention.

-Vegetables cultivated in areas where human feces are used as fertilizer must be thoroughly cooked or soaked in a dilute iodine solution before eating.

-Avoid unsafe food and water.

-Keeping immediate environment clean also helps. This includes laundering clothing exposed to unsanitary conditions and cleaning cooking surfaces well.

-Always wash your hands with soap and water before eating or preparing food.

-Boil or filter your water.

-Inspect food preparation facilities.

-Avoid unclean common areas for bathing.