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“WORMS, GERMS AND PARASITES: Parasitology for a Shrinking Planet”

Presented By: Mark A. Brown, MD

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WORMS, GERMS AND PARASITES

Parasitology for a Shrinking Planet

Mark A. Brown, MD

Goals

- Understand the modes of infection and the life-cycles of some common intestinal parasites and ectoparasitic infections
- Recognize the clinical manifestations of these same parasites
- Review clinical therapeutics in the treatment of these parasitic infections
- A case presentation

Introduction

- With increasing numbers of travellers, immigrants and refugees, parasitic infections are no longer a rarity in the US
- The helminths and protozoa that cause these infections infect billions and cause countless preventable deaths each year
- These infections are extremely resistant to vaccines, so our best interventions remain vector control and drug treatment

Soil Transmitted Helminths

- Ascaris Lumbricoides
- The most common helminthic infection, 1.4 billion with A. Lumbricoides infestation

Soil Transmitted Helminths

- Ascariasis
- Infection is through the fecal-oral route
- This puts children and residents of areas with poor sanitation at risk
- Causes over 60,000 deaths a year often by intestinal obstruction
- Autopsy of 2 year old South African Girl with 796 worms causing torsion of ileum
Soil Transmitted Helminths

- Ascaris
- Prevention is through routine hand washing and sanitation improvements
- Therapeutics: Albendazole 400mg X 1
  Mebendazole 500mg X 1
- De-worming every three to six months can reduce infection rates and morbidity

Soil Transmitted Helminths

- Hookworm: N. americanus & A. duodanale
- 800 million infected worldwide
- These smaller worms frequently cause anemia by sucking blood from the mucosa of the gut
- Symptoms include fluctuating appetite, diarrhea and constipation
- Eosinophilia can be seen on blood tests

Soil Transmitted Helminths

- Hookworm
- Infection common in adults and children in endemic areas
- Common cause of anemia in children and women of child-bearing age
- Chronic infections can cause developmental delays in children
- Treatment also with Albendazole and mebendazole
PINWORM

- Pinworm
- This helminthic infection is more common in temperate climates
- Little or no associated morbidity, more of a nuisance parasite
- Up to 40 million persons infected in the US
- Caucasian children with incidences of infection of 30-80%

PINWORM

- Infection is fecal oral with eggs that are laid in the perineal area causing an intense pruritus
- Family members and close contacts can be infected through clothing and bedding
- Diagnosis is by the "scotch test"
- Treatment again is with Albendazole or mebendazole

Waterborne Parasites

- Giardia Intestinalis
- The most frequent cause of non-bacterial and non-viral diarrhea in North America
- It has animal and human vectors and its hardy spores can remain alive for months in the environment
- Giardia Intestinalis was one of the "animolecules" observed by Anton von Leeuwenhoek in 1681
Waterborne Parasites
- Symptoms include protracted diarrhea, bloating and cramping
- Chronic cases can cause nausea, anorexia and weight loss with a corresponding malabsorption syndrome
- Treatment is with Metronidazole 500mg TID x 5 days or Tinidazole 2g x 1

Waterborne Parasites
- Entamoeba histolytica

Waterborne Parasites
- Amebiasis
- About 50 million infections per year, with 70,000 deaths often due to complications
- Infection is predominantly fecal oral, but the disease can also be acquired sexually
- Higher risk groups include male homosexuals, travelers, recent immigrants and the institutionalized

Waterborne Parasites
- Amebiasis
- Although there are many asymptomatic carriers, because of its invasive nature the amoeba can cause abdominal pain, bloody stools and ultimately dysentery
- Extraintestinal disease, abscesses can be found in areas such as the liver, brain and lungs

Waterborne Parasites
- Amebiasis
- For symptomatic intestinal or extra intestinal disease the drugs of choice are Metronidazole 500mg TID x 10 days or Tinidazole 2gm QD x 10 days
- This should be followed by 10 days of Paromomycin TID for luminal clearing
Ectoparasitic Infestations

- Literally a parasite that lives on the outer surface of the body
- Often, found in conditions of neglect and deprivation, but can cut across all socioeconomic strata
- Common examples include fleas, lice, and ticks

Ectoparasitic Infestations

- Sarcoptes Scabei

Ectoparasitic Infestations

- Scabies has a worldwide distribution, and can be found in all races and socioeconomic groups
- The key in the diagnosis is that it must be included in the differential
- If you don’t think of it you won’t diagnose it

Ectoparasitic Infestations

- Scabies

Ectoparasitic Infestations

- The treatment of choice is tropical permethrin (re-treatment in 7 days may be necessary)
- Ivermectin is also highly effective in a one time 200 microgram/kg dose
- Vector control, washing all exposed clothing and bedding in hot water, then drying them in a hot dryer is essential
- Lindane is potentially neurotoxic
Ectoparasitic Infestations

- Case presentation
- A 4 year old girl presents to our clinic in the Dominican Republic
- She is cared for by an elderly and infirm Grandmother, along with 5 other young children
- Clinical concerns include a skin rash, nutritional status and an abscess on the scalp

Ectoparasitic Infestations

- Case presentation
- The skin rash was diagnosed as a tinea
- The child was indeed underweight, requiring nutritional supplementation
- Patient was prepped for the I & D of the scalp abscess

Ectoparasitic Infestations

- Myiasis
- An infestation where fly larvae feed on the host's necrotic or living tissue
- The most common culprit is the botfly, but also occurs with the aptly named flesh fly
- Adult flies lay their eggs in open wounds or body cavities
- The size of the wound and the duration of the infestation determine the larval load

Ectoparasitic Infestations

- Myiasis
- Treatment includes opening the abscess like mass and removing the larvae individually with forceps
- There are larvacides available especially in veterinary medicine
- For those hard to reach maggots apply a thick layer of Vaseline and wait patiently
Ectoparasitic Infestations

- Myiasis

Sources


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