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**CLASS; MLT 4TH**

**SUBJECT; CLINICAL MYCOLOGY & PARASITOLOGY**

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**Q1: Write down the life cycle of Enterobius vermicularis.**

**ANS:**

**Enterobius vermicularis**

* It is known as pinworm
* Also known as threadworm
* It is parasitic worm

**LIFE CYCLE:**

* The life cycle of Enterobius vermicularis starts from egg to adult
* It takes place in human gastrointestinal tract of a single host
* From about 2—4 weeks or 4—8 weeks
* The life cycle start with eggs being ingested
* The egg hatch in the duodenum
* The emerging pinworm larvae grow quickly to a size of 140—150 micro meters and moves through small intestine towards the colon
* During migration they moult twice and become adults
* Males survive for 7 weeks, and females about 3—5 weeks
* The male and female mate in the ileum
* At night, the female migrates from the anus and releases thousands of fertilized eggs on the perianal skin and into the environment
* Within 6 hours, the eggs develop into embryonated eggs and become infectious
* Reinfection can occur if they are carried to the mouth by fingers after scratching the itching skin.

**Q2: Describe pathogenesis of Ascaris.**

 **PATHOGENESIS OF ASCARIS;**

* The major damage occurs during larval passage rather than from the existence of the adult worm in the intestine
* The principal sites of tissue reaction are the lungs, where inflammation with in eosinophilic exudate occurs in response to larval antigens
* Because the adults derive their enurishment from ingested food, a heavy worm burden may contribute to malnutrition, especially in children in developing countries
* Most infections are asymptomatic
* Ascaris pneumonia with fever, cough, and eosinophilia can occur with a heavy larval burden
* Abdominal pain and even obstruction can result from the presence of adult worms in the intestine.

**Q3: Explain the transmission and life cycle of Entamoeba histolytica in detail.**

**ANS: LIFE CYCLE AND TRANSMISSION;**

1. Cysts comes to the stomach. The cysts are resistance to the stomach environment and passes to the small intestine
2. Each cyst divide to produce 8 trophoziotes in the small intestine
3. These trophozoites will then move to the colon of the large intestine. In large intestine, these trophozoites will start colonization
* **Now they can cause two types of infection**
1. Invasive infection
2. Non-invasive infection
3. **Now in case of non-invasive infection**
* Histolytica trophozoites will just go on the surface of the mucus layer and can multiply by binary fusion, colonized at the surface of mucus membrane and will form new cyst.
* Just produce a lot of cysts it is called non-invasive infection do not invade the colon cells
* The cyst will excrete out from the body with stools
* Now the cyst can infect other humans by contamination of drinking water or unhygienic food
* So essentially, in non-invasive infection these trophozoites will leave in human body asymptomatically is cause mild disease, abdominal discomfort.
1. **In case of invasive infection;**
* The trophozoites will invade and colonize the colonic epithelial cells
* And this will cause the epithelial cells to lyse which will create ulcers with in the large intestine
* Neutrophils will response to the invasion and will cause further damage through lysing which lead to ulcer
* The epithelium will start creating ulcer with in the large intestine and after the damage to colon cells and mucus membrane, the trophozoites will move toward the blood stream.
1. After entering the blood, the trophozoites can target other organs. So, in invasive infection, through the blood stream trophozoites can infect other sites such as liver, lungs, brain.

**Q4: How will you diagnose Trypanosoma Cruzi inside a laboratory?**

**ANS: Trypanosoma Cruzi:**

* It is the cause of chagas diseases

**LABORATORY DIAGNOSIS;**

* First we will create blood smear from sample of infected person
* Acute disease is diagnosed by demonstrating the presence of trypomastigotes and thick or thin films of the patients’ blood
* Both stained and wet preparations should be examined, the latter formotile organisms
* Sometime the trypomastigotes are not numerous I the blood, and we did not see anything in the blood smear,
* Other diagnostic methods may be required, namely
* A stained preparation of a bone marrow aspirate or muscle biopsy specimen
* Culture of the organisms on special medium.

**Q5: Enlist Leishmania species names. Summarize the clinical finding of all species of Leishmania.**

**ANS:**

**SPECIES OF LEISHMANIA**

**There are four major species of Leishmania;**

1. Leishmania donovani
2. Leishmania tropica
3. Leishmania Mexicana
4. Leishmania braziliensis.

**CLINICAL FINDING;**

1. **Leishmania donovani;**
* Symptoms begin with intermittent fever, weakness, and weight loss
* Massive enlargement of the spleen is characteristic
* Hyperpigmentation of the skin is seen in light-skinned patients
* The course of the disease runs for months to years
* Initially, patients feel reasonably well despite persistent fever
* As anemia, leukopenia, and thrombocytopenia become more profound, weakness, infection, and gastrointestinal bleeding occur
* Untreated severe disease is nearly always fatal as a result of secondary infection.

1. **Leishmania tropica, Leishmania Mexicana, and Leishmania braziliensis:**
* The initial lesion of cutaneous leishmaniasis is a red papule at the bite site, usually on an exposed extremity
* This enlarges slowly to form multiple satellite nodules that coalesce and ulcerate
* There is usually a single lesion that heals spontaneously in patients with a competent immune system
* However, in certain individuals, if cell mediated immunity does not develop, the lesion can spread to involve large areas of skin and contain enormous numbers of organisms
* Mucocutaneous leishmaniasis begins with a papule at the bite site, nut then metastatic lesion form, usually at the mucocutaneous junction of the nose and mouth
* Ulcerating lesion destroy nasal cartilage but not adjacent bone
* These lesion heal slowly.

\*\*\***THE END\*\*\***