

Some important Short Notes with model answers

MCBG Part-III Paper 4 GroupB

1. Write short note on Giardiasis.

Ans:

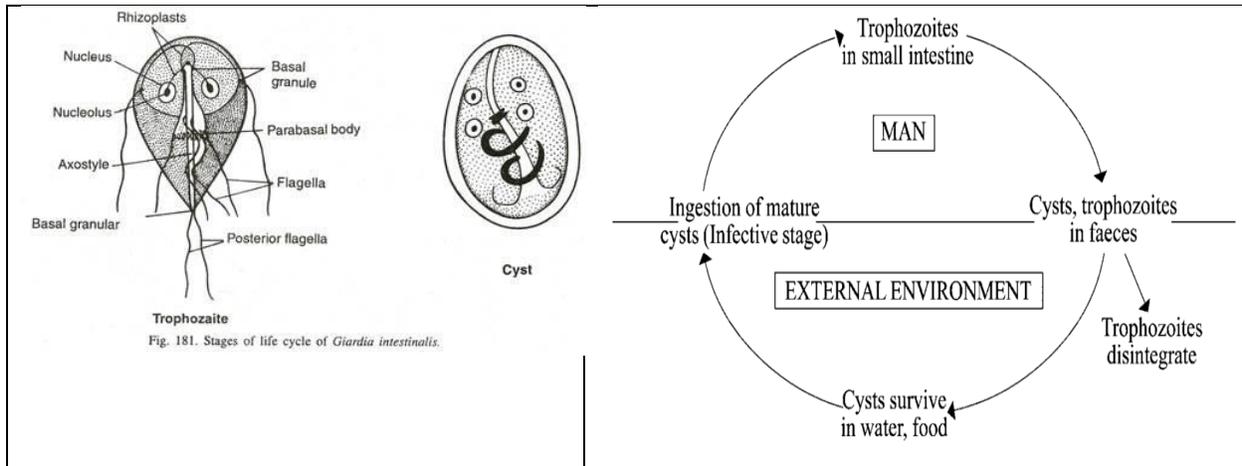
- **Giardiasis:** Giardiasis is an intestinal illness caused by infection with the parasite *Giardia lamblia*, which lives in contaminated water.
- **Symptoms-** The most common and prominent symptom is chronic diarrhea which can occur for weeks or months if untreated. Diarrhea is often greasy and foul-smelling often accompanied by a number of other symptoms, including gas, abdominal cramps, and nausea or vomiting.
- **Transmission**—Infection occurs when you accidentally ingest the parasite cysts. This can occur by swallowing contaminated water, by eating contaminated food or through person-to-person contact. Once inside a host, the cysts dissolve and the parasites are released.
- **Mechanism-** decreased expression of brush border enzymes, disruption of proteins that connect brush border endothelial cells to one another, morphological changes to the microvillus, and programmed cell death of small intestinal epithelial cells. The result is heavily increased intestinal permeability
- **Prevention**-hand-washing and avoiding potentially contaminated food and untreated water.maintain proper hygiene.
- **Treatment-** medications are needed to treat it, a nitroimidazole medication is used such as metronidazole, tinidazole, secnidazole or ornidazole

2. Write short note on Giardia cysts.

Ans:

- Giardia cysts: The *G. lamblia* cyst is 7 to 10 μm in diameter, and contains four nuclei.
 - The cyst is covered by a 0.3~0.5 μm -thick cyst wall.
 - The cyst wall is composed of two layers: outer filamentous layer and an inner membranous layer (further composed with two membranes).
 - Upon excystation, one cyst matures into two trophozoites.
 - **Encystation** is induced by cholesterol and exposure of bile salts and fatty acids. There are two phases of encystation.
 - In the early phase, cell wall proteins are synthesized and transported to the periphery. The proteins, containing a leucine-rich signature, are redirected to Encystation-specific transport vesicles (ESV).
 - The late phase involves the assembly of the cyst wall and morphological change.
 - The assembly begins with cyst wall filaments, then the filamentous layer of the cell wall. During the course of late-phase encystations, the trophozoite loses motility.
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- Eventually a non-adhering cyst enclosing two physically joined trophozoites with four nuclei results.
- The cyst is highly resistance against chlorination, ozonolysis, and can survive in cold water between 4~8 degrees Celsius.
- The cyst is protected against the host's gastric acid with its cyst wall.



3. Write short note on OPPORTUNISTIC INFECTION:

Ans:

An opportunistic infection (OI) is an infection caused by microbes that take advantage of an opportunity not normally available, such as a host with a weakened immune system, an altered microbiota (such as a disrupted gut microbiota), or breached integumentary barriers.

OIs are caused by a variety of germs (viruses, bacteria, fungi, and parasites). OI-causing germs spread in a variety of ways, for example in the air, in body fluids, or in contaminated food or water.

Many of these pathogens do not cause disease in a healthy host that has a normal immune system. Opportunistic infections occur more often or are more severe in people with weakened immune systems

HIV damages the immune system. A weakened immune system makes it harder for the body to fight off HIV-related OIs. HIV-related OIs include pneumonia, Herpes simplex virus (HSV) infection, Salmonella infection, candidiasis (thrush), toxoplasmosis, and tuberculosis (TB).

4. Write short note on Koch's Postulates.

Ans: Koch's Postulates are four criteria that were established by Robert Koch to identify the causative agent of a particular disease.

Koch's postulates are the following:

- The microorganism must be found in abundance in all organisms suffering from the disease, but should not be found in healthy organisms.
- The microorganism must be isolated from a diseased organism and grown in pure culture.
- The cultured microorganism should cause disease when introduced into a healthy organism.
- The microorganism must be reisolated from the inoculated, diseased experimental host and identified as being identical to the original specific causative agent.

Limitation: However, Koch's postulates have their limitations and so may not always be the last word. They may not hold if:

- The particular bacteria (such as the one that causes leprosy) cannot be "grown in pure culture" in the laboratory.
- There is no animal model of infection with that particular bacteria.
- A harmless bacteria may cause disease if: It has acquired extra virulence factors making it pathogenic. It infects an immunocompromised patient.
- Not all people infected by a bacteria may develop disease.

Despite such limitations, Koch's postulates are still a useful benchmark in judging whether there is a cause-and-effect relationship between a bacteria (or any other type of microorganism) and a clinical disease.