Lecture 4

Intestinal Protozoa

- Additional Notes
- Important
- Explanation
- Examples

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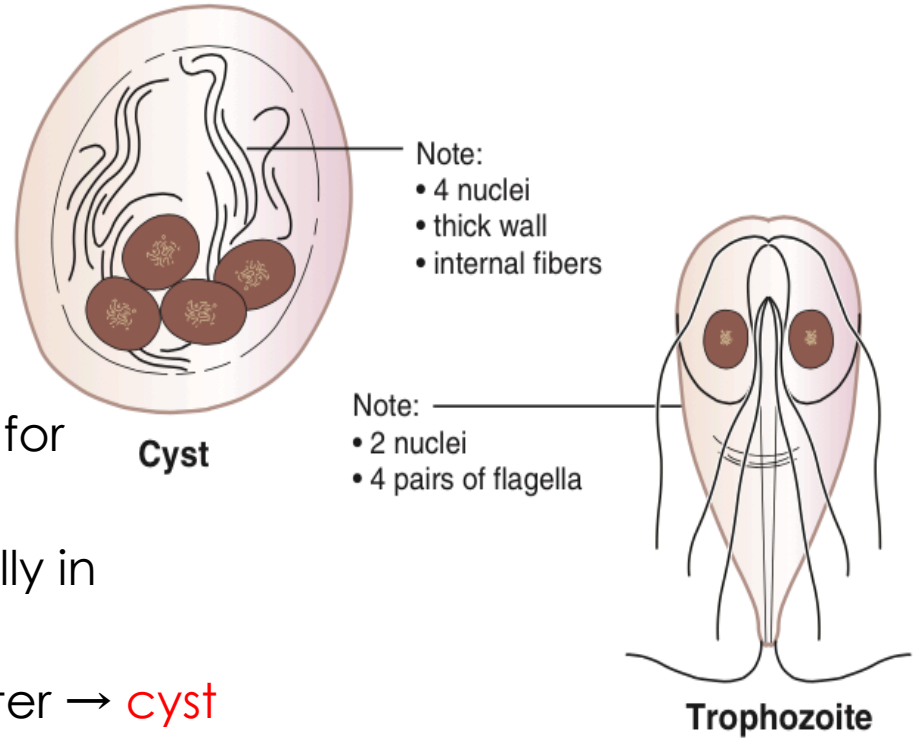
Introduction

PROTOZOA	HELMINTHS
Unicellular Single cell for all functions	Multicellular Specialized cells
1:Aoebae: move by pseudopodia. 2:Flagellates: move by flagella. 3:Ciliates: move by cilia 4:Apicomplexa(Sporozoa) tissue parasites	Round worms (Nematodes): - elongated, cylindrical, unsegmented. Flat worms: - Trematodes: leaf-like, unsegmented. - Cestodes: tape-like, segmented.

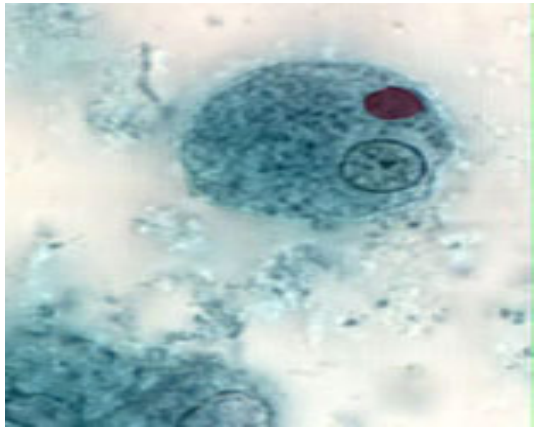
Giardia lamblia

- Incubation period: 1-2 weeks
- Asymptomatic infections (majority)
- Symptomatic Infections:
  - ✓ Typical picture: IP 1-2 weeks followed by diarrhea for about 6 weeks,
  - ✓ Atypical : Severe diarrhea , malabsorption especially in children.
- Fecal–oral transmission from contaminated food or water → cyst ingested → in duodenum, cyst differentiates into trophozoite → attaches to duodenal wall (no invasion) → damage to microvilli, inflammation → malabsorption, nonbloody & foul-smelling (fatty) diarrhea, weight loss.
- Stools examination:
  - ✓ Microscopy for cysts or trophozoits
  - ✓ Detection of Giardia antigens in stools
- Examination of duodenal contents: trophozoites.
- Drug of choice: Metronidazole



Entamoeba Histolytica

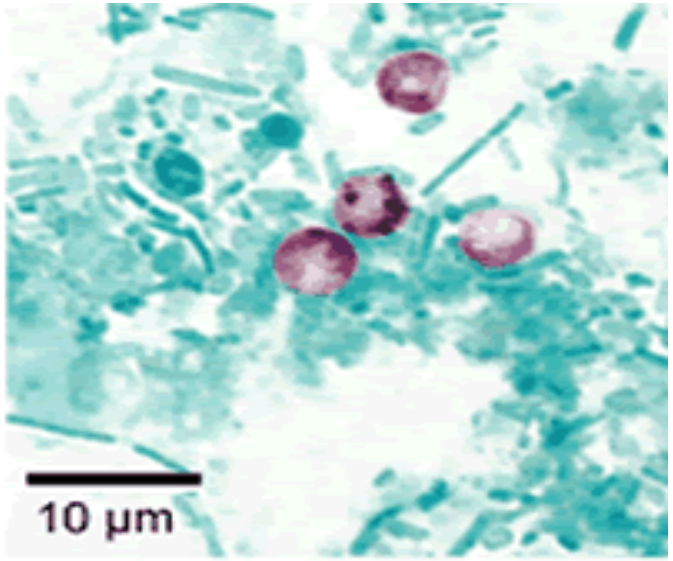
- The incubation period can be from few days to few weeks depending on the infective dose, the infective dose can be as little as 1 cyst.
- Fecal–oral transmission from contaminated food or water → cyst ingested → in ileum, cyst differentiates to trophozoite (motile amoeba):
  - Asymptomatic carrier (most common): trophozoite becomes 4-nuclei cyst → cyst released in stools
  - Intestinal amebiasis: trophozoite invades colonic epithelium, by hydrolyse host tissues with their active enzymes → local necrosis → dysentery
    - ✓ E. Histolytica in mucosa can be seen with ingested erythrocytes.
  - Extra-intsetinal amebiasis: trophozoite invades through colonic epithelium producing raindrop-shaped ulcers → enters portal circulation → travels to liver and forms abscess → abscess enlarges → RUQ pain, weight loss (from liver abscess, trophozoite may invade diaphragm and create pulmonary abscess)



- Laboratory Diagnosis:
  - ✓ Intestinal:
    - ➢ Stools examination :
      - Wet mount (cysts and trophozoites)
      - Concentration methods (only cysts)
    - ➢ Serology (mainly for invasive infections): IHA , ELISA
  - ✓ Extra-intestinal:
    - ➢ Serology: IHA , ELISA
    - ➢ Microscopy of tissues or fluids
- Treatment
  - ✓ Intestinal :
    - ➢ Asympromatic (cysts only): diloxanide furoate (Furamide)
    - ➢ Symptomatic(cysts and trophozoites): metronidazole
  - ✓ Extra-intestinal:
    - ➢ Metronidazole

Cryptosporidium Parvum

- Fecal–oral transmission from animals or humans → oocysts ingested → oocysts release sporozoites in small intestine → sporozoites differentiate into trophozoites and attach to intestinal microvilli → watery, non-bloody diarrhea
- In immunocompromised patients, prolonged and more severe diarrhea → malnutrition
- Diagnosis:
  - ✓ Stool sample: oocysts seen using acid-fast stain
  - ✓ Serology
- Treatment:
  - ✓ Self-limited in immunocompetent patients
  - ✓ In AIDS patients: paromomycin



Quiz

1. Diagnosis of Cryptosporidium Parvum by :

a. Acid-fast stain
b. Safranin
c. Stools examination microscopy for cysts
d. Biopsy from the intestine

2. Treatment of Cryptosporidium in AIDS patients is:

a. Paromomycin
b. Furamide
c. Metronidazole
d. Self limited

3 .Infective stage of Giardia lamblia is:

a. Trophozoite
b. Pre-cyst
c. Uninucleate
d. Cyst

ANSWERS: 1.a 2.a 3.d