Intestinal Protozoa

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.**

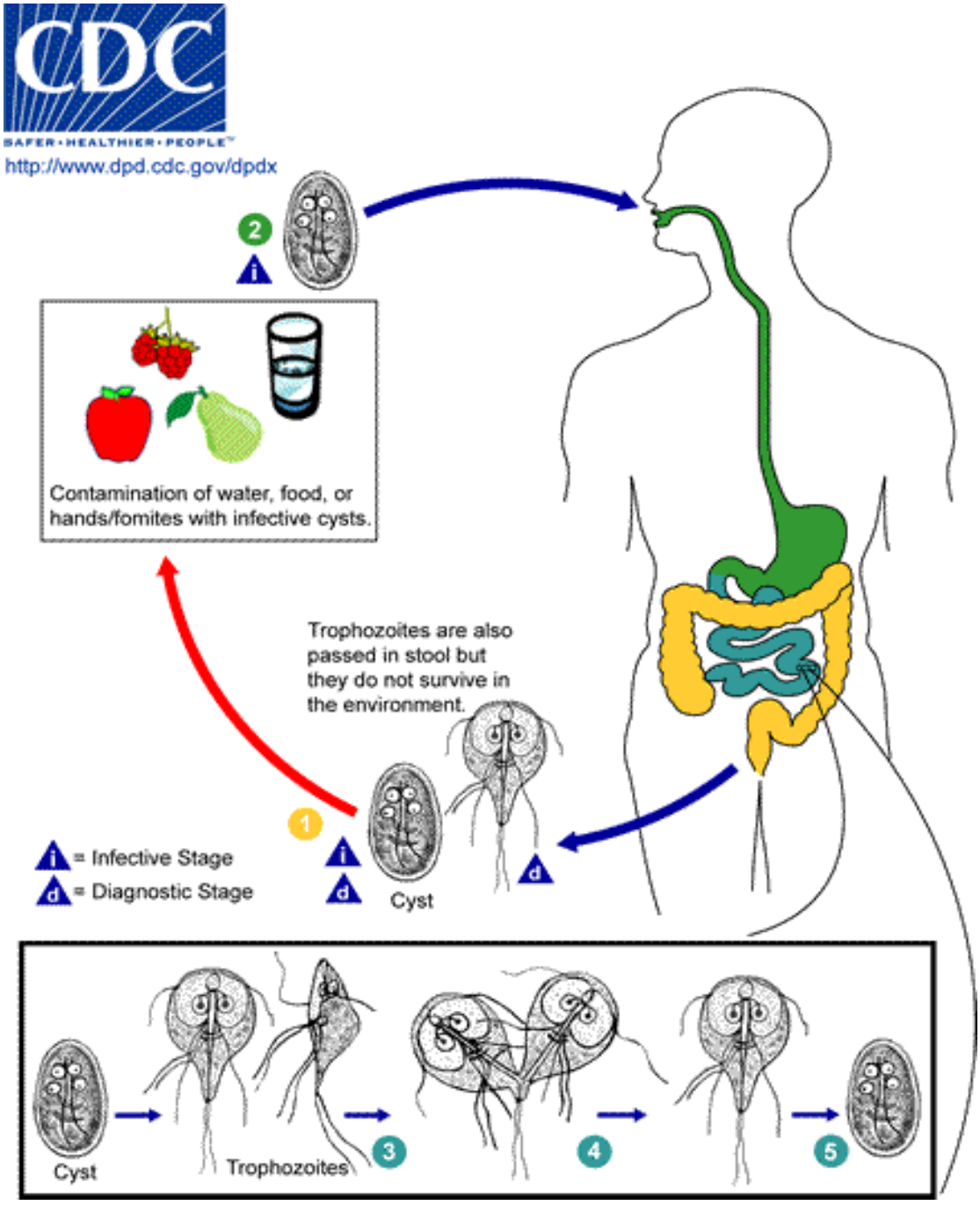
► **Stools examination:**

-Microscopy for cysts or trophozoits.

-Detection of Giardia antigens in stools.

►**Examination of duodenal contents: trophozoites.**

► **Drug of choice: Metronidazole.**



Life cycle of *Giardia lamblia*

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 making 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).**

Lab diagnosis:

►**Intestinal:**

Stool 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

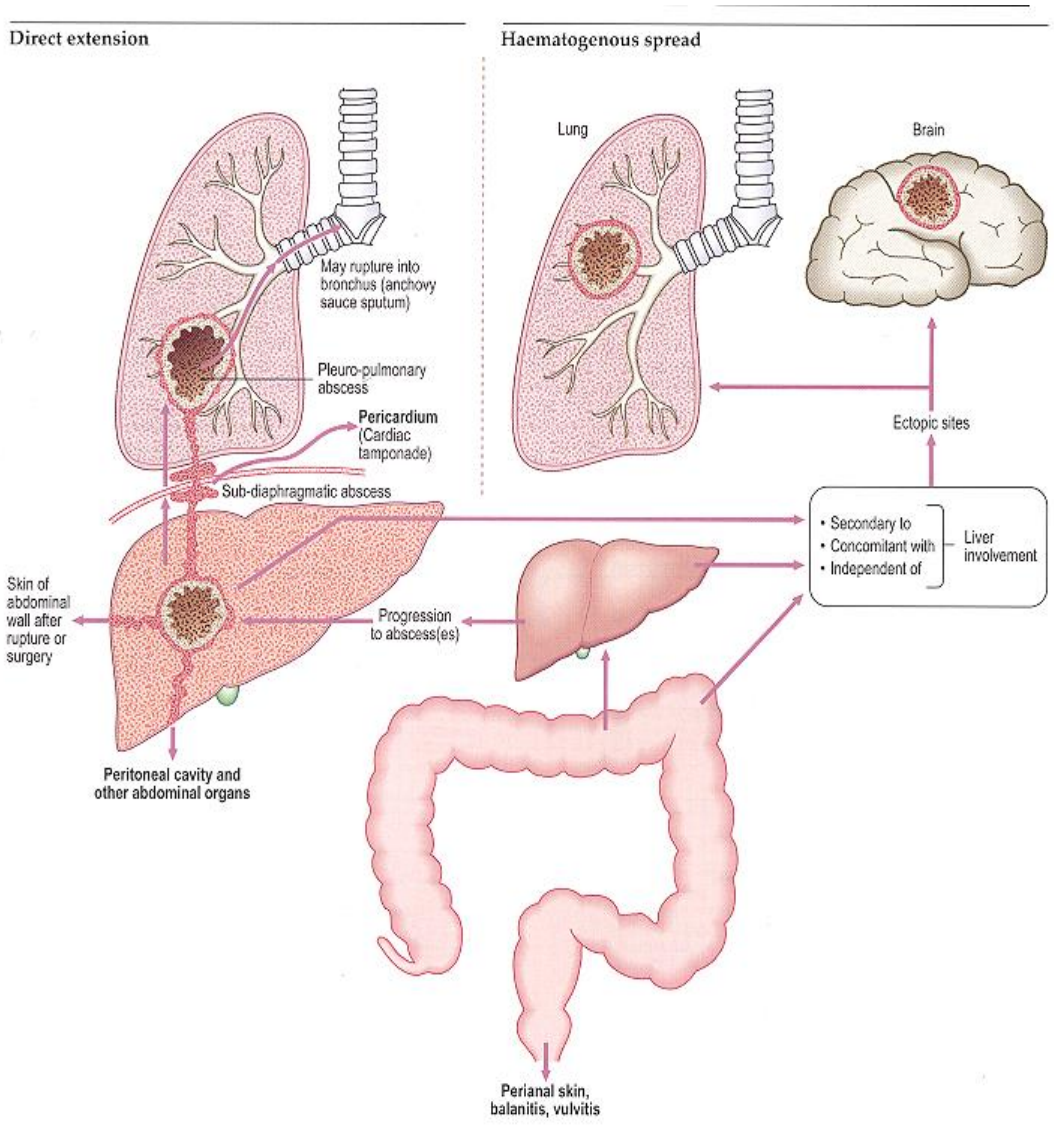
► **Intestinal:**

- Asympromatic (cysts only): diloxanide furoate (Furamide).

- Symptomatic(cysts and trophozoites): metronidazole.

► **Extra-intestinal:**

-Metronidazole



Pathology of extra-intestinal Amoebiasis

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:

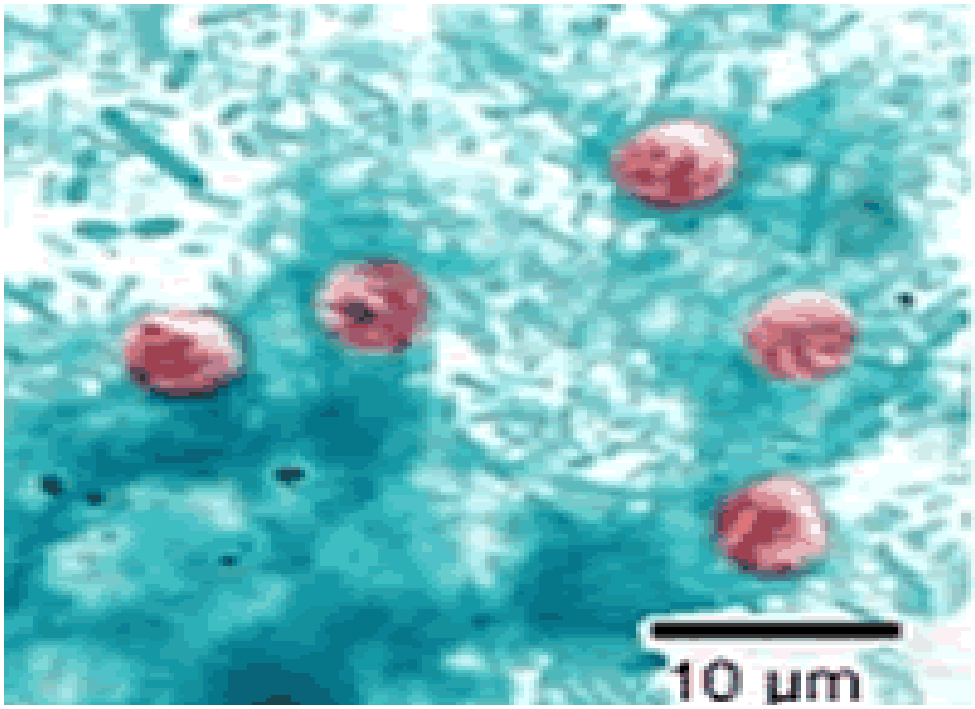
►**Stool sample: oocysts seen using acid-fast stain.**

►**Serology.**

Treatment:

►**Self-limited in immunocompetent patients.**

►**In AIDS patients: paromomycin.**



***Cryptosporidium*, acid-fast stain**

Quiz:

1-Which of the following is the infective-state of Giardia lamblia:

A- trophozoits.

B- Cyst.

C- All of above.

2-Which of the following is the treatment of Giardia lamblia infection:

A- Metronidazole.

B- Gentamycin.

C- Paromomycin.

3-Which of the following stains is useful to diagnose Cryptosporidium Parvum:

A- Silver stain.

B- H&E stain.

C- Acid-Fast stain.

4-Which of the following is the best treatment of asymptomatic amoebiasis:

A- Paromomycin.

B- Metronidazole.

C- diloxanide furoate.

Answers: 1-B 2-A 3-C 4-C

Done by:

Abdulaziz Altaweel