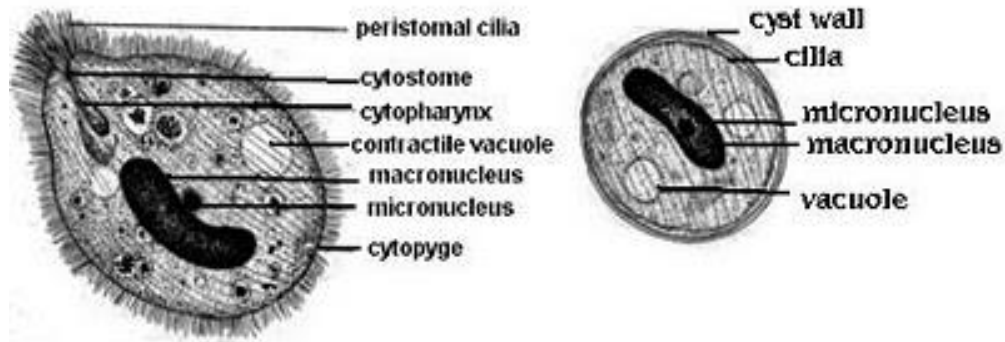


Ciliate : *Balantidium coli*

Balantidium coli is a parasitic species of ciliate protozoan that causes the disease Balantidiasis. It is the only member of the ciliate phylum known to be pathogenic to humans.

Morphology

- *Balantidium coli* as seen in a wet mount of a stool specimen:
- The organism is surrounded by cilia.
- *Balantidium coli* has two developmental stages, a trophozoite stage and a cyst stage.
- In trophozoites, the two nuclei are visible. The macronucleus is long and sausage-shaped, and the spherical micronucleus is nested next to it, often hidden by the macronucleus. The opening, known as the peristome, at the pointed anterior end leads to the cytostome, or the mouth.
- in the posterior end, a small groove can be seen which represents the cytopyge (anus)
- The cytoplasm also contains numerous food vacuoles with granules of starch, cellular debris, bacteria, erythrocytes, etc.
- Osmotic pressure of the parasite is regulated by two contractile vacuoles through the cytopyge. The undigested food residues are eliminated through the cytopyge.
- Cysts are smaller than trophozoites and are round and have a tough, heavy cyst wall made of one or two layers. Usually only the macronucleus and sometimes cilia and contractile vacuoles are visible in the cyst.

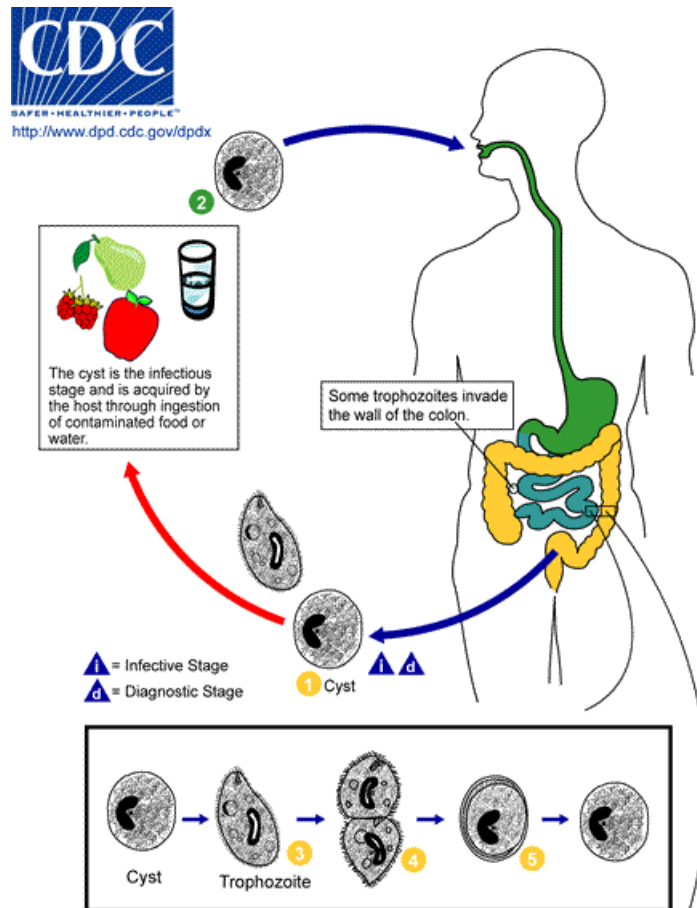


Transmission

Balantidium is the only ciliated protozoan known to infect humans. Balantidiasis is a zoonotic disease and is acquired by humans via the feco-oral route from the normal host, the pig, where it is asymptomatic. Contaminated water is the most common mechanism of transmission.

Life cycle

- Once the cyst is ingested, it passes through the host's digestive system. While the cyst receives some protection from degradation by the acidic environment of the stomach through the use of its outer wall, it is likely to be destroyed at a pH lower than 5.
- Once the cyst reaches the small intestine, trophozoites are produced.
- The trophozoites then colonize the large intestine, where they live in the lumen and feed on the intestinal flora.
- Some trophozoites invade the wall of the colon using proteolytic enzymes and multiply, and some of them return to the lumen.
- In the lumen trophozoites may disintegrate or undergo encystation.
- Encystation is triggered by dehydration of the intestinal contents and usually occurs in the distal large intestine, but may also occur outside of the host in feces.
- cysts are released into the environment where they can go on to infect a new host.



Clinical manifestation

- Although *Balantidium coli* usually resides in the lumen of its host, trophozoites can invade the mucosa of the large intestine (cecum and colon) and cause ulcerations.
- The parasite secretes a substance called hyaluronidase enzyme, which helps degrade intestinal tissue and facilitates penetration of the mucosa.
- Other bacteria in the intestine may enter the ulcer leading to secondary infections.
- Common symptoms of Balantidiasis include chronic diarrhea, occasional dysentery (diarrhea with passage of blood or mucus), nausea, foul breath, colitis (inflammation of the colon), abdominal pain, weight loss, deep intestinal ulcerations, and possibly perforation of the intestine.

The differences between ulcer of *E.histolytica* and of *B.coli*

1. The ulcer of amoeba is small than of *B.coli*
2. Ulcer of amoeba is flask shape with small opening while of *B.coli* is round shape with large opening.

3. In the balantidiasis the invasion restricted to the mucosa, in the ameobiasis the parasite invade the mucosa and serosa
4. In the balantidiasis extra intestinal lesions are very rare while in amoebiasis the extra intestinal lesions are common.

Diagnosis

Examination of stool samples, looking for trophozoites and cysts ,Trophozoites are readily identified because of their large size and the fact that B. coli is the only ciliate that parasitizes humans

Treatment

Balantidiasis infection can be treated effectively with antibiotics. Three drugs are commonly used and dministered orally. (1) Tetracyclines (2) Metronidazole (3) Iodoquinol