

Class: Ciliata

Ciliates move by means of hair-like projections of the cytoplasm, called cilia, each of which is much like a little flagellum in appearance and structure.

Balantidium coli

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

Morphology

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. Cysts are smaller than trophozoites and are round and have a tough, heavy cyst wall made one or two layers. Usually only the macronucleus and sometimes cilia and contractile vacuoles are visible in the cyst. Living trophozoites and cysts are yellowish or greenish in color.

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

Epidemiology

Balantidiasis in humans is common in the Philippines, but it can be found anywhere in the world, especially among those that are in close contact swine. The disease is considered to be rare and occurs in less

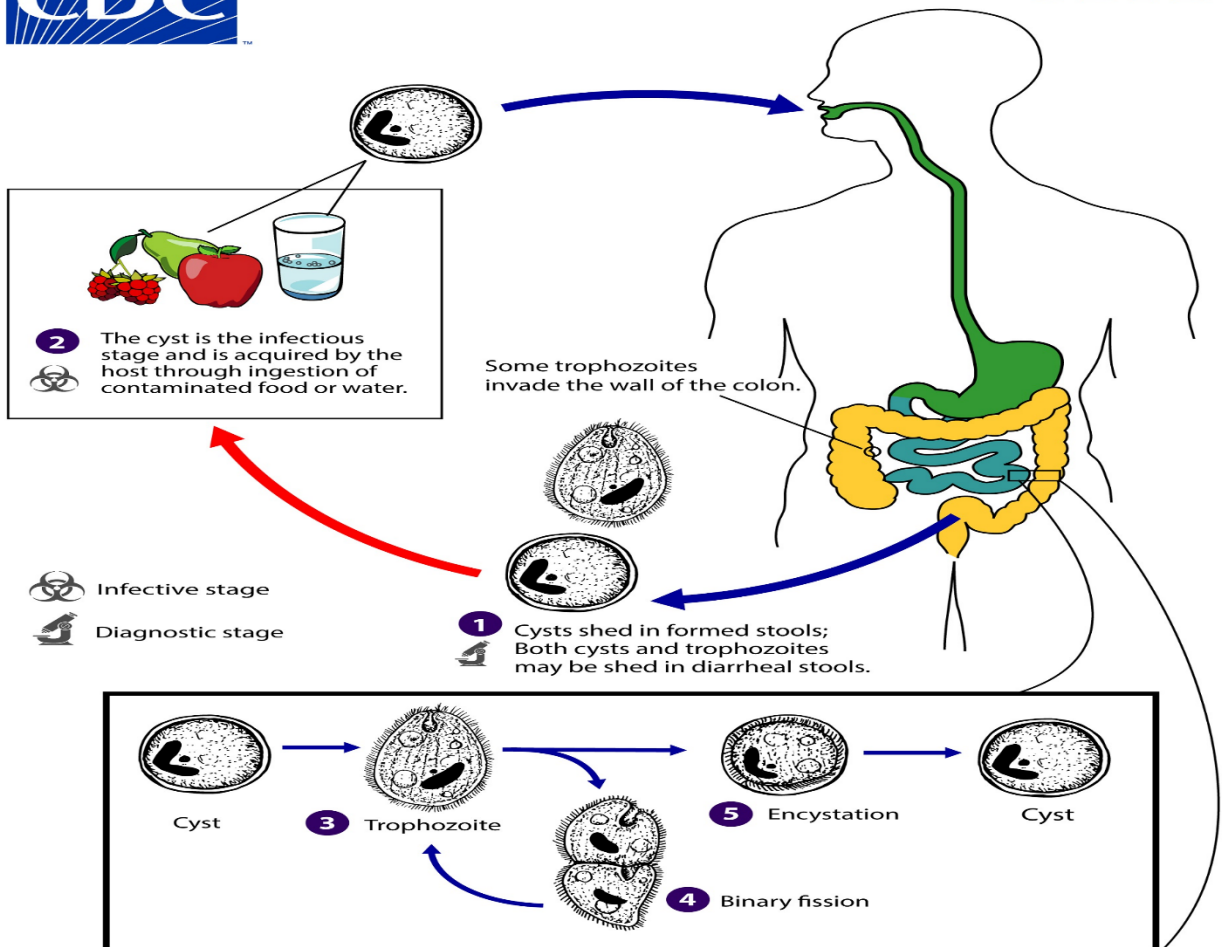
than 1% of the human population. The disease poses a problem mostly in developing countries, where water sources may be contaminated with swine or human feces.

Life cycle

Infection occurs when a host ingests a cyst, which usually happens during the consumption of contaminated water or food. 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, allowing it to survive easier in the stomachs of malnourished individuals who have less stomach acid. 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. Now in its mature cyst form, cysts are released into the environment where they can go on to infect a new host.



Balantidium coli



Pathogenesis:

Most infections with B.coli are apparently harmless, . However, rarely , the trophozoites invade the mucosa and submucosa of the large intestine and terminal ileum and produce ulcer sub surface abscesses in the mucous or submucous coats that sometimes extend to the muscular layer.The ulcers are roun, ovoid,or irregular in shape with undermined edge . The floor of the ulcer is covered with pus and necrotic material. In acute disease, explosive diarrhea may occur as often as every twenty minutes. Perforation of the colon may also occur in acute infections which ean lead to life-threatening situations, in patients with acute infection, extraintestinal involvement such as liver abscess formation, peritonitis ,pleuritis ,and pneumonia may occur. Chronic recurrent diarrhea , alternating with constipation ,is the most common clinical manifestation but there may be bloody mucoid stool , anorexia , nausea, epigastric pain, vomiting, and intestinal colic. In a majority of patients, recovery occurs in 3-4 days even without treatment

Diagnosis :

Diagnosis is based on faecal examination, which revealed mainly trophozoites in acutely infected patients and cysts in chronic cases, it is generally easy to recognized B.coli in stool specimens because of its large size (60×45 u or more), an outer membrane covered with short cilia ,and its large kidney - shaped macronucleus