Ciliates:

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Balantidium coli:

1- Related to phylum ciliophora, class: kinetofragminophorea

2- Considered as the largest protozoan known to humans

3- Balantidium coli troph may measure from 28µm to 125µm in length. The average troph with is approximately 40µm. the ovoid to sac-shaped B. coli troph tapers at the anterior end. The organism typically exhibits rotary, boring motility. The troph contains two nuclei, the micronucleus is located adjacent to the macronucleus. The micronucleus is often no readily visible, even in stained preparations, whereas the macronucleus may often appear as a hyaline mass (kidney shape macronucleus).

   Two contractile vacuoles are located in the granules cytoplasm, although sometimes only one is readily visible.

   The cytoplasm may also contain food vacuoles. The toph is equipped with a small cytosome. A layer of cilia surrounds the organism, which serves as its means of locomotion.

4- Cysts are subspherical to oval, may measure from 43 to 66 µm, contain two nucleus: kidney-shaped macronucleus usually present and small, spherical micronucleus may not be observable.

   One to two visible contractile vacuoles present in young cyst. A double-protective cyst wall surrounds the organism.

   A row of cilia may be visible between the two cyst wall layers in unstained young cysts.

5- Lab. diagnosis of B. coli is accomplished by examining stool specimens for the presence of troph & cysts.

6- B. coli life cycle is very similar that of Ent. histolytica. Human infection is initiated upon ingestion of infective cysts in contaminated food or water. Unlike that of Ent. hstolytica multiplication of the B. coli nuclei does not occur in the cyst phase.

Following excystation in the small intestine, the resulting trophs take up residence and feed in the cecal region and terminal portion of the ileum as well as in the lumen mucosa and submucosa of the large intestine. The multiplication of each troph occurs by transverse binary fission.

Infrequently conjugation also occurs during which reciprocal exchange material tack place between two trophs enclosed within a single cyst wall.

Encystation occurs in the lumen. The resulting cysts mature and become the infective stage for transmission into a new host. The cysts may survive for weeks in the outside environment.

7- B. coli is seen in large intestine, caecum and terminal ileum. It may penetrate the intestinal mucosa to cause ulceration.
8- B. coli passes its life cycle in two stages but in one host only. Natural host: pigs, man is incidental host.
9- Transmission: occurs from pig to pig, pig to man, man to man and man to pig.

The parasite is harmless to pig. It has also been detected in monkey and rat.

Balantidiasis:-

Balantaidiasis is a zoonoses and human begins have natural resistance to this infection. Therefore, human infection occurs only when the resistance of the host is lowered by one or more predisposing factors, which include: malnutrition, alcoholism, poorly balanced diet, infection by bacterial or other parasites.

The infection can take one of the three clinical forms:-

Chronic, acute, or fulminating. Most commonly is chronic which is characterized by diarrhea alternating with constipation, tender colon, and anemia. Acute form which resembles amoebic dysentery is produced in debilitated individual. It can also cause appendicitis, UTI, vaginitis, liver abscess, and pulmonary infection. Extraintestinal involvement is much rare as compares to amoebiasis.

B. coli can cause ulcer in the mucosa and submucosa of the large intestine. The ulcer is flask shaped ulcers separated by areas of normal mucosa. The ulcer are usually multiple and superficial but deep ulcers are also seen in fulminating cases.

Treatment:-

Oxytetracycline (50mg-3time daily) for 10 days or iodoquinol 650mg three times daily for 20 days, flagyl is also be useful in treatment.

Balantidium coli: (notes)

1- Ciliates undergo both an asexual reproduction (binary fission and a sexual reproduction involving conjugation. During conjugation, two opposite mating types pair and exchange genetic material.

   Conjugal contact triggers meiosis in the micronuclei resulting in 4 haploid micronuclei. Concurrently the macronucleus breaks down and disappears.

   Three of the micronuclei disintegrate and the remaining micronuclei divide again. Each of the conjugating organisms donates a micronucleus to its make via a cytoplasmic bridge that connects them.

   The gametic micronucleus fuses with the stationary micronucleus forming the diploid zygotic nuclei undergo another round of division. One of these micronuclei develops into the macronucleus. Thus completing the cycle.

2- Balantidium means (large bag)