

Laboratory diagnosis of parasitic diseases

(Tissue Amebae/ Ciliates)

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Laboratory diagnosis of Tissue Amebae

1) *Naegleria fowleri*

- diagnosis can be made by microscopic examination of cerebrospinal fluid (CSF). A wet mount may detect motile trophozoites, and a Giemsa-stained smear will show trophozoites with typical morphology
- *Naegleria fowleri* does not form cysts in human tissues.
- There are two forms of trophozoites: ameboid and ameboflagellate
- The cytoplasm is granular and contains many vacuoles.
- The single nucleus is large and has a large, dense, central karyosome that is surrounded by a halo.

2) *Acanthamoeba*

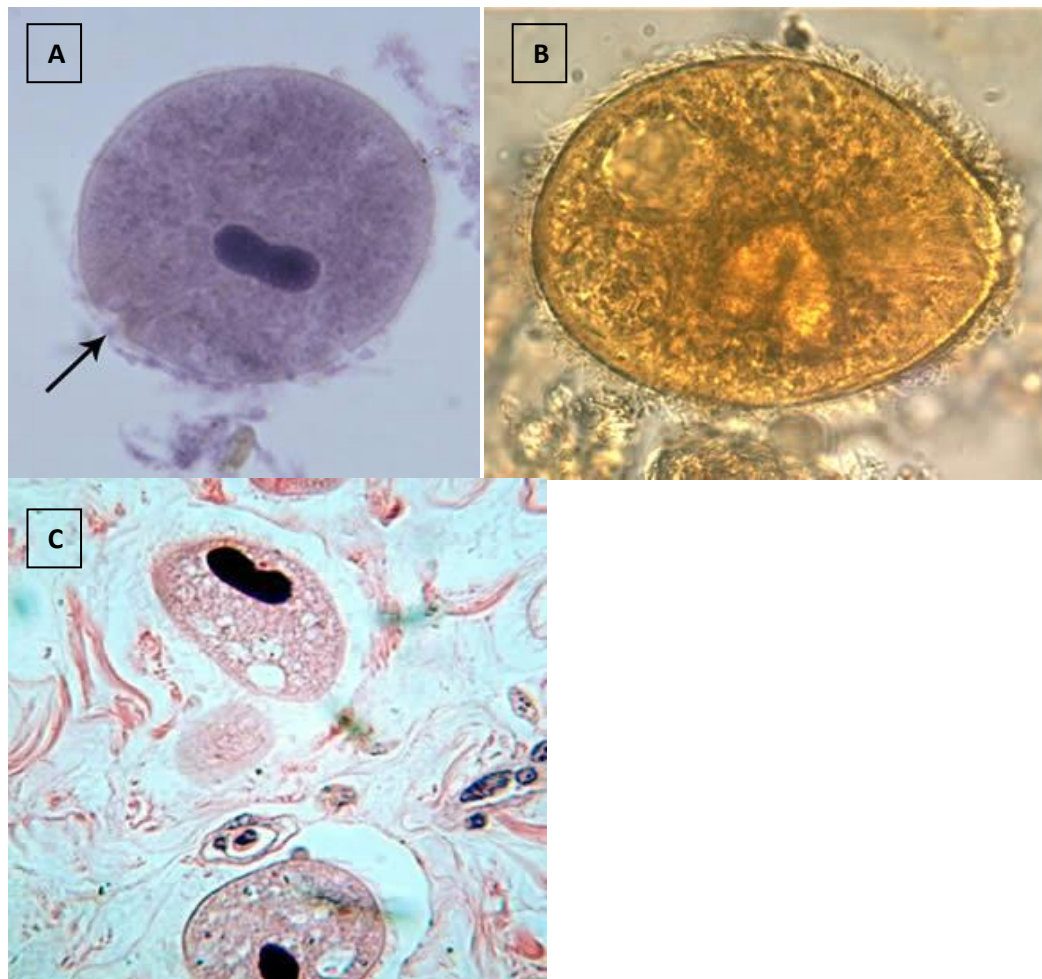
- In *Acanthamoeba* infections, the diagnosis can be made from microscopic examination of stained smears of biopsy specimens (brain tissue, skin, cornea) or of corneal scrapings, which may detect trophozoites and cysts.
- The trophozoite is uncommonly seen in CSF, and diagnosis is typically made by brain biopsy demonstrating either or both cyst or trophozoites.
- The cysts of *Acanthamoeba* spp. are typically 10-25 μm in diameter.
- The cysts have two walls: a wrinkled fibrous outer wall (exocyst) and an inner wall (endocyst) that may be hexagonal, spherical, star-shaped or polygonal.
- Cysts contain only one nucleus with a large karyosome.
- Cysts may be found in the brain, eyes, skin, lungs and other organs.

Laboratory diagnosis of Ciliates (*Balantidium coli*)

- Diagnosis is based on detection of trophozoites in stool specimens or in tissue collected during endoscopy.
- Cysts are less frequently encountered. *Balantidium coli* is passed intermittently and once outside the colon is rapidly destroyed. Thus stool specimens should be collected repeatedly, and immediately examined or preserved to enhance detection of the parasite.
- Both *Balantidium coli* trophozoites and cysts are found in stool.

Microscopy:

Trophozoites are characterized by: their large size (40 μm to 200 μm), the presence of cilia on the cell surface, a cytostome, and a bean shaped macronucleus which is often visible and a smaller, less conspicuous micronucleus.

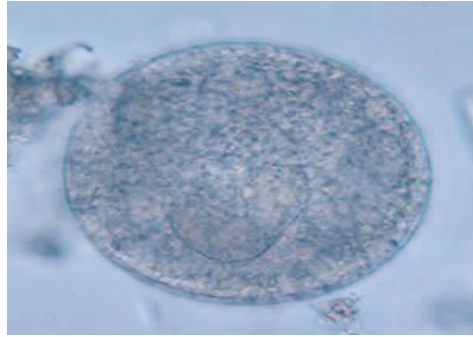


A: *B. coli* trophozoite in a Mann's hematoxylin stained smear, 500× magnification. Note the cytosome (black arrow) and the bean shaped macronucleus.

B: *B. coli* trophozoite in a wet mount, 1000× magnification. Note the visible cilia on the cell surface.

C: *B. coli* trophozoites in tissue stained with hematoxylin and eosin

Cysts:



B. coli cyst in a wet mount, unstained.