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Entamoeba histolytica

Introduction

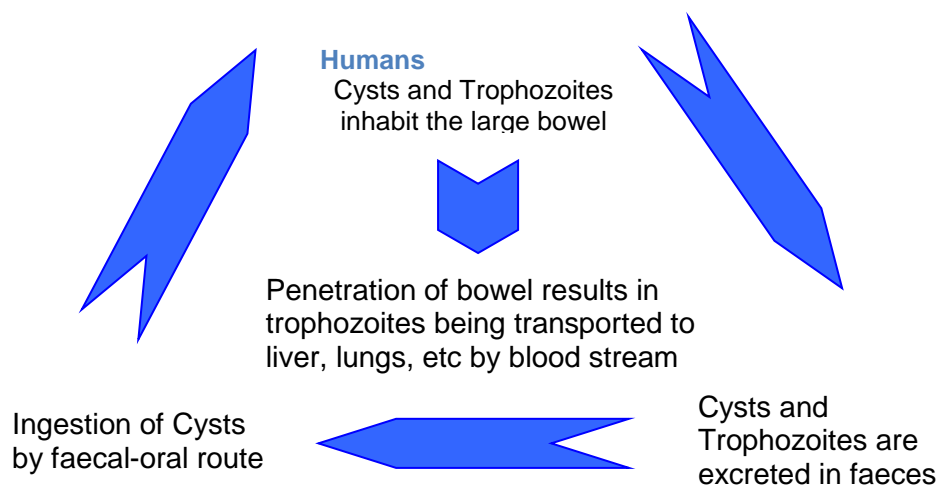
There is a large number of species of amoebae which parasitise the human intestinal tract. Of these *Entamoeba histolytica* is the only species found to be associated with intestinal disease. Although many people harbour this organism world wide, only about 10% develop clinically invasive disease thus the parasite has been shown to present of two very differing clinical presentations.

The commensal or non-invasive luminal form where the parasite causes no signs or symptoms of disease.

The pathogenic or invasive form where the parasite invades the intestinal mucosa and produces dysentery or amoebomas and may give rise to extraintestinal lesions through bloodborn spread, mainly in the liver.

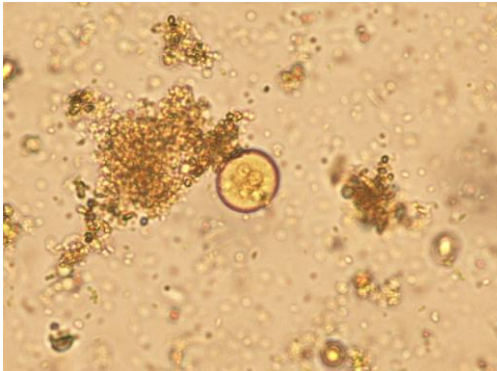
Sargeant and Williams (1978) conclusively proved that invasive and non-invasive strains of *E. histolytica* could be differentiated by isoenzyme electrophoresis and now the application of molecular biology has finally confirmed the presence of two distinct species with the same morphological features. The pathogenic or invasive species has retained the name *E. histolytica* and the non-pathogenic, non-invasive species has been named *E. dispar*.

Life cycle



Morphology of cysts

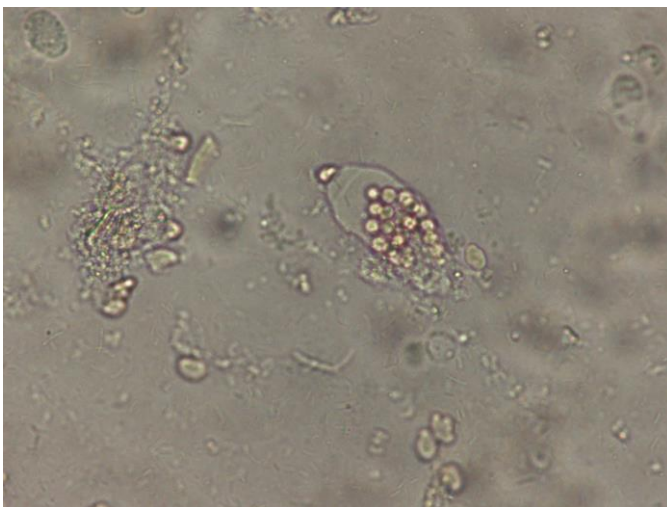
Cysts of *E. histolytica/dispar* are 10 - 15 μ in diameter and contain 1 - 4 nuclei. Chromatoid bodies are usually present in young cysts as elongated bars with bluntly rounded ends. Glycogen is usually diffuse, but in young cysts it is often present as a concentrated mass, staining reddish brown with iodine.



A cyst of *Entamoeba histolytica*

Morphology of Trophozoites

The trophozoites of *E. histolytica* recovered from dysenteric stools exhibit ingested red blood cells and clear pseudopodia. Those of *E. dispar* will have no ingested red blood cells. They can be up to 60 μ in diameter and motility is rapid and unidirectional. On a permanently stained faecal smear e.g. Trichrome or Iron haematoxylin, the morphological features are more visible. When using Trichrome stain nuclei, chromidial bars, chromatin, red cells and bacteria stain red cytoplasm stains blue-green and background and yeasts stain green. The presence of a small centrally placed karyosome is clearly visible. With Iron haematoxylin, Nuclear chromatin and the karyosome will be stained immensely black. The remainder will be varying shades of grey/black.



A trophozoite of *Entamoeba histolytica* showing ingested red blood cells

Clinical Disease

Intestinal disease

Patients with intestinal disease may exhibit a number of symptoms including profuse diarrhoea with blood and mucus, fever and dehydration. Amoebic ulcers may develop in the large colon and can also be found in the rectal area. The ulcers are usually “flask shaped” with a small opening on the mucosal surface and a larger area below the surface.

Hepatic Disease

Trophozoites are transported from the intestine to the liver and liver disease is characterised with abdominal pain, fever, hepatomegaly and tenderness. If the abscess ruptures, there is spreading to the brain, pericardium and other sites.

Laboratory Diagnosis

Microscopy

Where amoebic dysentery is suggested, the laboratory should be informed that a “hot stool” is being supplied so that it can be examined within twenty minutes of being passed. Direct microscopy should be done by mixing a small amount of the specimen in 0.9% sodium chloride solution. This permits detection of motile trophozoites of *Entamoeba histolytica* and can also provide information on the content of the stool i.e. the presence of leucocytes and red blood cells. Microscopic examination of an amoebic abscess aspirate e.g. in the liver or lungs, may reveal haematophagous trophozoites. It must be examined immediately by mixing a drop of warm saline with some aspirated pus on a microscope slide.

Serology

If visceral or hepatic amoebiasis is suspected serological tests should be done as microscopic methods do not always reveal the characteristic trophozoites. The tests of choice are indirect fluorescent antibody test (IFAT), counter immunoelectrophoresis (CIEP) and enzyme linked immunosorbent assay (ELISA)