

## AMOEBIASIS

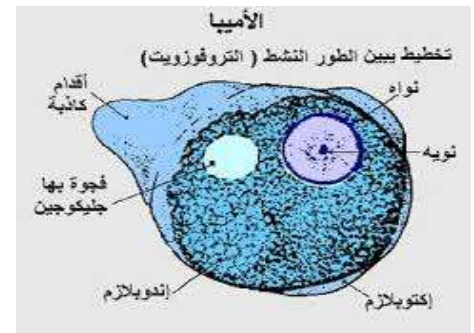
Amoebas primitive unicellular microorganisms with a relatively simple life cycle which can be divided into two stages:

- Trophozoite – actively motile feeding stage.
- Cyst – quiescent, resistant, infective stage.

### Entamoeba histolytica

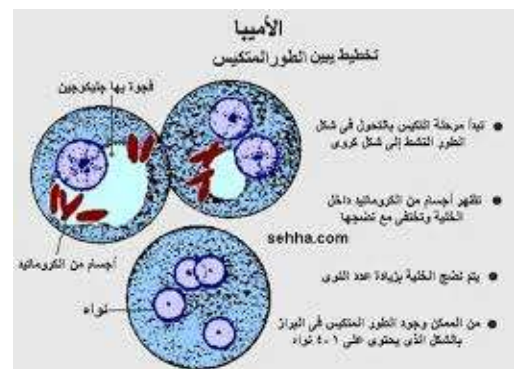
#### Morphological features

(a) **Trophozoites:** Viable trophozoites vary in size from about 10-60µm in diameter. Motility is rapid, progressive, and unidirectional, through pseudopods. The nucleus is characterized by evenly arranged chromatin on the nuclear membrane and the presence of a small, compact, centrally located karyosome. The cytoplasm is usually described as finely granular with few ingested bacteria or debris in vacuoles. In the case of dysentery, however, RBCs may be visible in the cytoplasm, and this feature is diagnostic for *E.histolytica*.



#### (b) Cyst

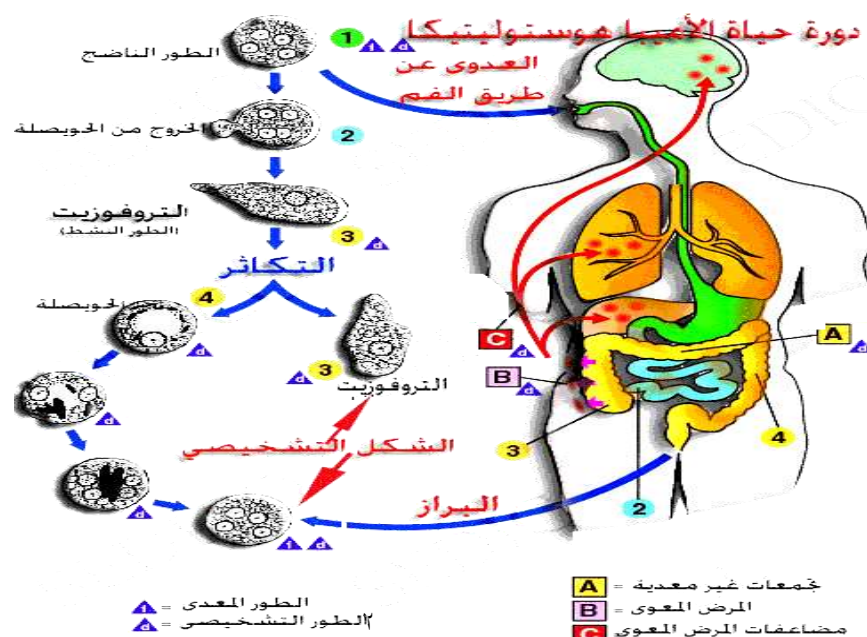
Cysts range in size from 10-20µm. The immature cyst has inclusions namely; glycogen mass and chromatoidal bars. As the cyst matures, the glycogen completely disappears; the chromatoidals may also be absent in the mature cyst.



## Life cycle

Intestinal infections occur through the ingestion of a mature quadrinucleate infective cyst, contaminated food or drink and also by hand to mouth contact. It is then passed unaltered through the stomach, as the cyst wall is resistant to gastric juice. In terminal ileum (with alkaline pH), excystation takes place. Trophozoites being actively motile invade the tissues and ultimately lodge in the submucous layer of the large bowel. Here they grow and multiply by binary fission. Trophozoites are responsible for producing lesions in amoebiasis.

Invasion of blood vessels leads to secondary extra intestinal lesions. Gradually the effect of the parasite on the host is toned down together with concomitant increase in host tolerance, making it difficult for the parasite to continue its life cycle in the trophozoite phase. A certain number of trophozoites come from tissues into lumen of bowel and are first transformed into pre-cyst forms. Pre-cysts secrete a cyst wall and become a uninucleate cyst. Eventually, mature quadrinucleate cysts form. These are the infective forms. Both mature and immature cysts may be passed in faeces. Immature cysts can mature in external environments and become infective.



## Pathogenesis

Trophozoites divide and produce extensive local necrosis in the large intestine. Invasion into the deeper mucosa with extension into the peritoneal cavity may occur. This can lead to secondary involvement of other organs, primarily the liver but also the lungs, brain, and heart. Extraintestinal amebiasis is associated with trophozoites. Amoebas multiply rapidly in an anaerobic environment, because the trophozoites are killed by ambient oxygen concentration.

## Clinical features

- 1- Diarrhoea, flatulence, and cramping.
- 2- the severe disease is characterised by the passing of numerous bloody stools in a day.
- 3- (fever, leukocytosis, rigors) are present in patients with extraintestinal amebiasis.
- 4-hepatomegaly.

## Laboratory diagnosis

In intestinal amoebiasis:

- Examination of a fresh dysenteric faecal specimen or rectal scraping for trophozoite stage. (Motile amoebae containing red cells are diagnostic of amoebic dysentery).
- Examination of formed or semiformed faeces for cyst stage. (Cysts indicate infection with either a pathogenic *E.histolytica* or non-pathogenic *E.dispar*.)

## Extraintestinal amoebiasis

- Diagnosed by the use of scanning procedures for liver and other organs.

- Specific serologic tests, together with microscopic examination of the abscess material, can confirm the diagnosis.

**Treatment:**

- 1- metronidazole followed by iodoquinol.
- 2- The cysticidal agents.
- 3- Metronidazole, chloroquine, and diloxanide furoate can be used for the treatment of extra intestinal amoebiasis.

**Prevention**

- 1- Introduction of adequate sanitation measures and education about the routes of transmission.
- 2- Avoid eating raw vegetables grown by sewerage irrigation and night soil