PROTOZOA - ENTAMOEBA HISTOLYTICA

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Entamoeba histolytica is a pathogenic parasite in the intestine of human beings and many other primates. It inhabits the mucous and sub-mucous layers of the large intestine. It feeds mainly on the tissues of the intestinal wall and often produces severe ulcers and abscesses. In chronic cases, it may enter the blood circulation to reach the liver, lung, brain and other organs. It causes a serious and often fatal disease known as amoebic dysentery or amoebiasis. E. histolytica exists in two distict forms: the magna Trophozoite or form and the minuta or precystic form.(FIG 01)

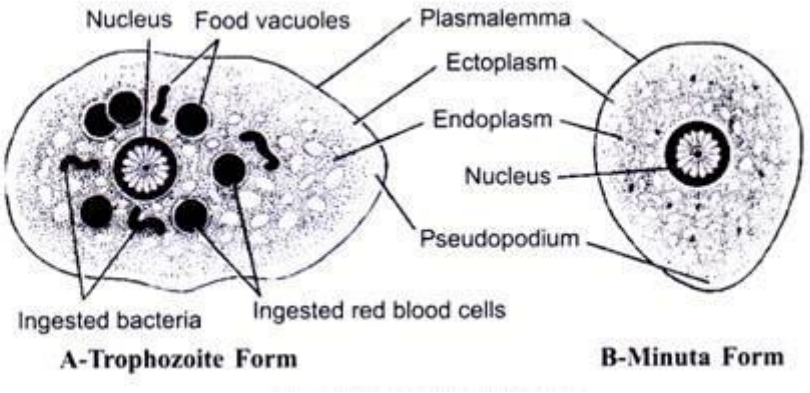

FIG 01

Trophozoites:

The adult trophic form of Entamoeba is known as Trophozoite or Magna. It inhabits anterior part of large intestine, i.e. colon of human beings. It resembles amoeba in structure but differs in parasitic mode of life. Its body is covered by plasma lemma and cytoplasm is differentiated into ectoplasm and endoplasm. There is a single large, broad and blunt pseudopodium formed of ectoplasm. Endoplasm contains single spherical nucleus and food vacuoles. Nucleus has peripheral crown of chromatin blocks and a centrally located nucleolus.

The trophozoites multiply by repeated binary fission in the intestinal wall of host. Some of the daughter entamoebae grow into normal adults while others stop growing. These are distinctly smaller than the normal trophozoites and are called Minuta forms.

Precystic (minuta Form):

It is smaller, spherical and non- pathogenic stage. Normally, it lives in the lumen of the intestine and rarely found in tissues. It undergoes encystations and helps in transmission of parasites from one host to other.

Life cycle:

Entamoeba histolytica is monogenetic, i.e., its life cycle is completed on one host only; the man.

Its life cycle is completed as follows:

Encystment:

In the precystic forms, entamoeba remains only in the intestinal lumen. They undergo encystment but before encystment, the parasites round up, eliminate food vacuoles and accumulate considerable amount of food materials in the form of glycogen and black rod-like chromatoid granules. Each parasite secretes a thin, rounded, resistant, colourless and transparent cyst wall around it.

The cysts of Entamoeba histolytica vary in size. Its cytoplasm is clear and each cyst is mononucleate at this stage. Presence of chromatoid bodies is the characteristic of the cysts of Entamoeba histolytica. They occur either singly or in the multiples of two or more. The nucleus of the cysts divides twice so that each cyst now becomes tetra nucleate (fig. 2). At this stage, the cyst is infective to a new host. Encysted forms pass out with the faecal matter of the host.

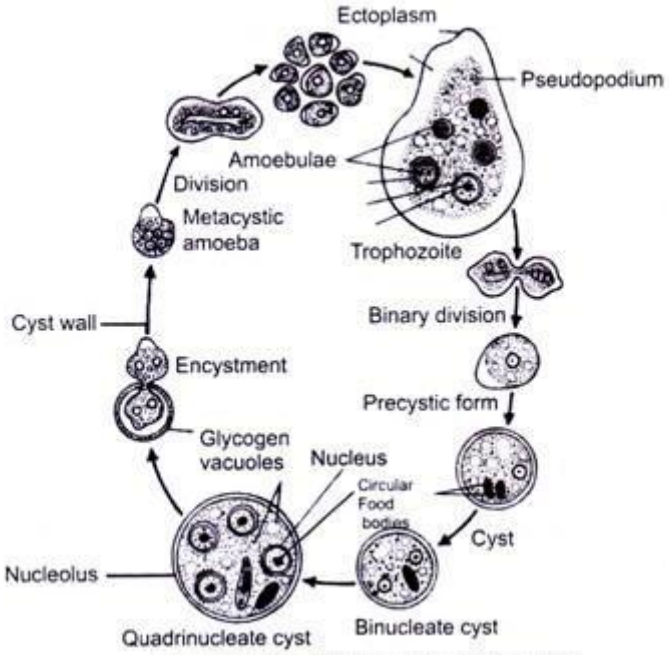

fig. 2

Transfer to new host:

The infective cysts remain viable for a considerable length of time outside the human intestine, if environmental conditions are favourable. Infection of fresh human host takes place by swallowing the infective cysts with contaminated food and drinks.

Excystment:

The metacystic trophozites feed on the contents of the intestine and grow in size to form the trophozites of the next generation. The trophozoites stay in the lumen of the intestine for a particular period when they may attack the wall of the intestine and start the life cycle again. Entamoeba histolytica causes amoebic dysentery, abscesses in liver, lungs and brain and non-dysenteric infections.