B.Sc (Zoology)

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ENTAMOEBA HISTOLYTICA

Three species of Entamoeba are found in man.

(i) E. histolytica is a pathogenic parasite found in the colon and a variety of other organs and tissues causing amoebic dysentery, amoebic abscess of liver, spleen, kidney, diaphragm etc. which are collectively called amoebiasis.

(ii) E. gingivalis is commonly found in tartar on teeth and in gum. Though largely feeding on bacteria, it has been found to aggravate the diseases of teeth and gum like pyorrhoea etc. It sometimes reaches the tonsils and infects them.

(iii) E. coli is found in colon. It feeds exclusively on bacteria, food debris and is considered a harmless commensal.

History

Losch first saw an amoeba in the dysentric stool of man in 1875 which he named Amoeba coli.

Leidy (1879) placed all amoeboid organisms found in the alimentary canal of animals and man in the genus Entamoeba. The pathogenic nature of this parasite was first suggested by Koch and Gaffky in 1886. Councilman and Lafleur (1891) were the first to study the pathology of amoebic dysentery and amoebic liver abscess. Quincke and Roos (1893) gave the differences b/w E. histolytica and E. coli.

The name E. histolytica for the pathogenic amoeba in man was given by Schaudinn (1903). The structure of this parasite has been studied by Noller (1922) and Kofoid (1927). The precyst stage was studied initially by Elmassian (1909) and Walker and Sellards (1913). Hartmann and Prowazek (1907) first saw the cyst stage. Broeck and Drobohlav (1927) successfully cultured the parasite in the laboratory and paved the way for the study by Dobell (1919-28) on the binary fission and mitosis, by Cleveland and Sanders (1939) on excystment. The ultrastructure of Entamoeba has been studied by Miller and coworkers (1963), Fletcher and Coworkers (1962).

Distribution:

E. histolytica is almost worldwide in distribution but more common in tropical and semitropical countries where sanitation is poor.

Structure

E. histolytica is found in three stages in man i.e, the trophozoite or motile feeding form, the precyst and the infective resistant stage - the cyst. The species appears in man in two varied forms.

(i) A small race or minuta form which always lives in the lumen of colon. It is not a tissue invading form, feeding largely on bacteria, food remains of bacteria. It is largely harmless.

(ii) A large race or magna forms which invades the tissue feeding on enzymatically dissolved host cells, erythrocytes of tissue fragments. It is highly pathogenic.

Trophozoite — This stage is rarely found in human stool but can be cultured in the laboratory. It measures from 7 to 50 mm in diameter, the small race ranging in size from 7 to 12 mm and the large race from 15 to 50 mm. A freshly passed vegetative form is very active, moving in flowing locomotion with the help of a prominent lobe like pseudopodium. The cytoplasm is clearly divided into an outer, clear, hyaline and retractile ectoplasm surrounding a granular greenish endoplasm. A single nucleus is slightly eccentrically placed. In stained individuals, the nucleus has a characteristic appearance. The nuclear membrane is thin the inside of which is arranged a thin but prominent layer of chromatin granules. In the centre of the nucleus is a small