Lesson

TRYPANOSOMA GAMBIENSE

Trypanasomes were first seen in 1841 and the genus Trypanasoma was created by Gruby in 1843. Some of the early findings of pathogenic trypanasomes related to those are found in animals (Evans, 1880. Bruce, 1895). The first human trypanoso was reported by Forde (1901) in a case of Gambian fever, and Dutton (1902) named the parasite Trypanosoma gambiense. A year later Castellani found them in cerebrospinal fluid (CSF) of man suffering from sleeping sickness. Kleine (1909) discovered that tse-tse fly Glossina palpalis is the intermediate host for this parasite. The life cycle in the fly was first studied by Kleine, Bruce and Nabarro, and Minchin during 1908 to 1912. Stephens and Fantham (1910) distinguished T. rhodesience from T. gambiense. The first complete account of the life cycle was provided by Roberstson (1913). Vickerman (1962) reinvestigated the life cycle of the brucei group to which this species also belongs. The biology of the parasite and its pathogenecity has been reviewed by Lumsden (1965), Hoare (1967) and Ormerod (1971). The ultrastructure has been studied by Vickerman (1969).

Distribution

The parasite is found in west Central Africa. On the w Coast its range is form 15°N to 15°S latitude, the eastern limit is formed by the shores of Lakes Victoria and from 10°N to 10°S latitude. Tanganyika ranging

Structure

T. gambiense is a minute active elongated flattened like flagellate. The body is long and often curved wi pointed tapering anterior end and a blunt conical pos end. The shape is somewhat variable in human blood a CSF. A/c to Ormerod (1967), this parasite is pleomor

and three distinct forms are found:-

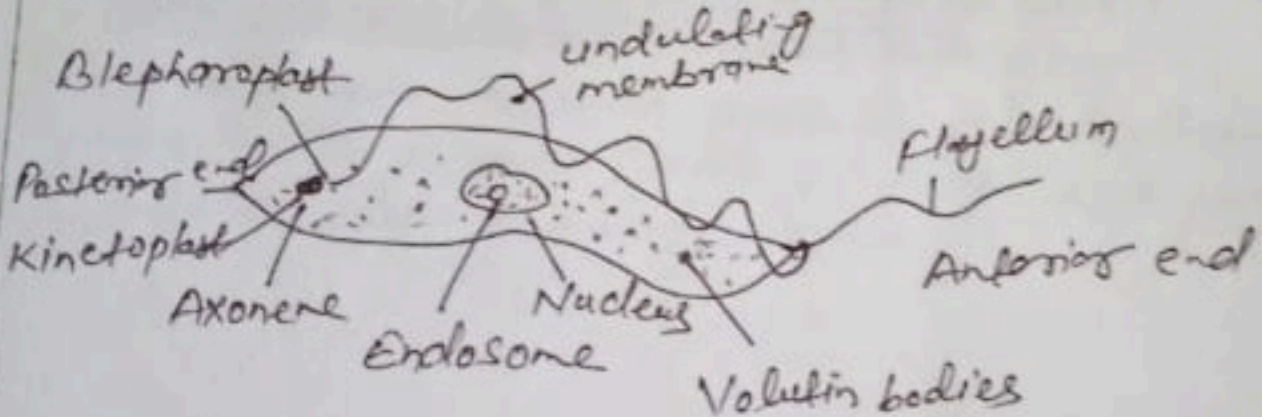
(i) Long slender form with long free flagellum - average length 29 μm.

(ii) Short stumpy form with practically no free flagellum - average length 10 μm.

(iii) Intermediate form - average length 23 μm.

The overall average size of the parasite is 15-30 μm long & 1.5 - 3.5 μm broad.

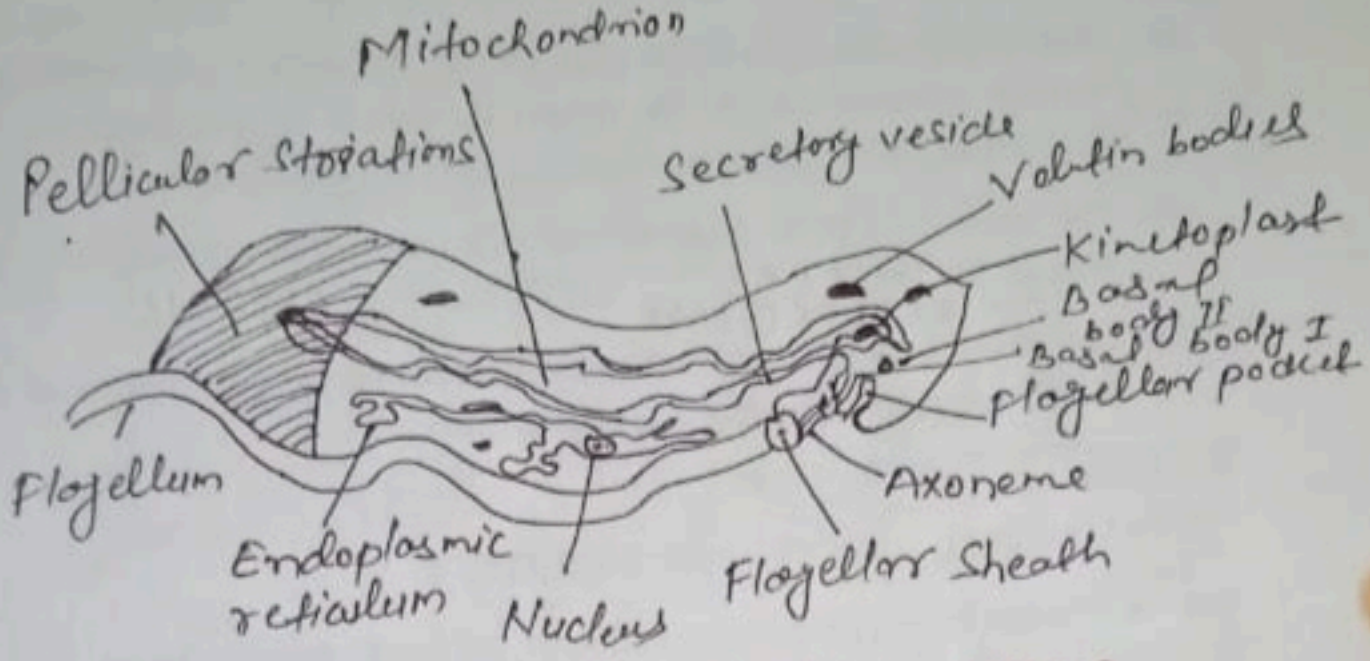
The surface of the body is covered with pellicle showing spiral striations. Near the middle of the body is a large oval nucleus with a prominent central endosome. A Kinetoplast consisting largely of DNA is located near the posterior end. A blepharoplast is situated close to



Structure of Trypanosoma gambiense

the Kinetoplast. Axonene consisting of microtubule arises from the blepheroplast. The basal part of the axonenee is enclosed in a flagellar pocket which can be seen only under electron microscope.

The axoneme emerges from the pocket ensheathed with cytoplasm forming a flagellum which runs anteriorly attached to the body by a thin periplastic membranelle forming a flagellum ~~which runs anteriorly attached to th~~ forming undulating membrane. At the anterior end of the flagellum extends out free of the body.



Ultrastructure of Trypanosoma

Metachromatic volutin granules are scattered in the cytoplasm. They are stores of RNA and polyphosphate important during binary fission.