Wuchereria Bancrofti: A Filarial Worm

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Wuchereria Bancrofti:

SYSTEMATIC POSITION

Phylum-Ashelminthes

Class – Nematoda

Subclass – Phasmida

Order-Filarioidea

Genus – *Wuchereria*

Species – *bancrofti*

Habitat and Structure of a Filarial Worm,

Habitat:

Filarial worm is a dreaded human parasite and found only in the lymphatic vessels and lymph nodes of man only. Wuchereria is digenetic i.e. it requires two hosts to complete its life cycle. Man is the definitive host harbouring the adult worms of this parasite, while intermediate host is

a blood sucking insect, usually a Culex mosquito specially C. pipiens and occasionally species of Anopheles and Aedes. Adult worm resides coiled up in the lymph glands and lymph passages of man.

Structure: Adult worms:
These are long hair like, filiform and cylindrical in shape. They are creamy white in colour and both ends are tapering, the head-end terminating in a slightly rounded swelling. Sexes are separate and there is a distinct sexual dimorphism.

The females are 65 to 100 mm long and only 0.25 mm in diameter. Males are smaller, 40 mm in length and 0.1 mm in diameter. The tail-end of male is curved ventrally and contains two spicules of unequal length and a number of genital papillae. The tail end of female is narrow and abruptly pointed. The female possesses a ventrally placed vulva disposed anteriorly and provided with pyriform ejector mechanism or ovijector.

Mouth aperture is simple without lips. Pharynx or oesophagus is divisible into an anterior muscular and a posterior glandular portion. There is no oesophageal bulb in the digestive tract and intestine is simple as in other nematodes. Males and females remain coiled together and can only be separated with difficulty.

Embryos (Microfilariae):
i. The live and active microfilariae are colourless, transparent and have elongated bodies with blunt heads and rather pointed tails.

ii. The microfilariae of W. bancrofti measures about 290 μm in length by 6-7 μm in breadth.

iii. The live microfilariae are enclosed in a thin sheath which projects prominently beyond both the ends of the larvae.

The sheath is much longer than the larval body so that the larva can move forwards and backwards within it. The sheath is present as an investing membrane round the larva and it represents the chorionic envelope.

iv. The cuticle is thin and striated and is secreted by a single layer of sub-cuticular cells.

v. The anterior end of Mf. bancrofti is blunt bearing a distinct cephalic space and rudiments of adult buccal cavity with oral stylet (Fig.).

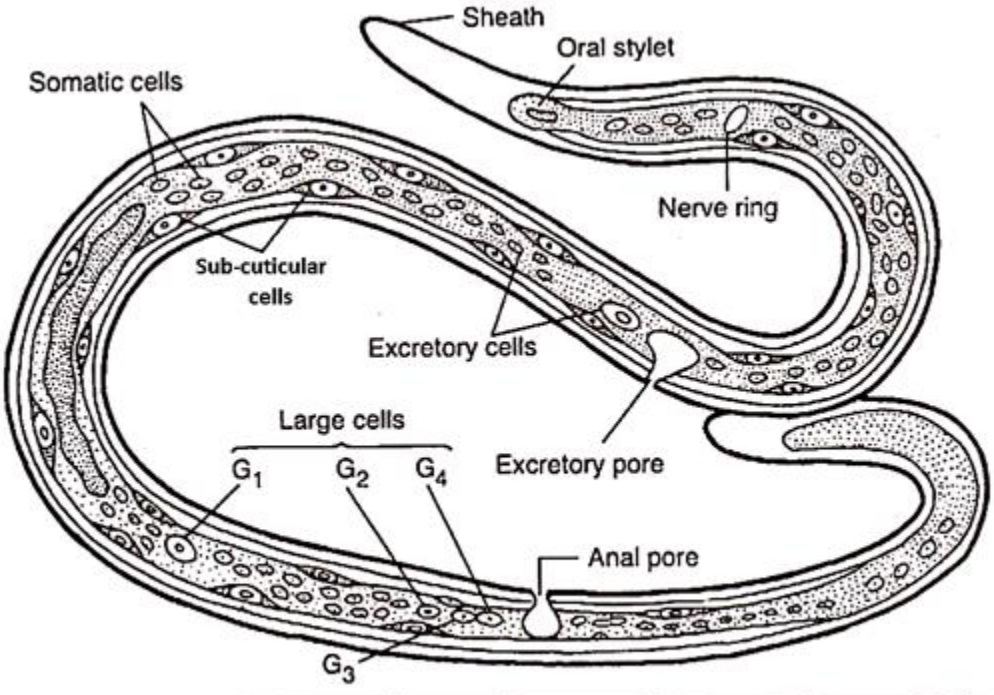

Fig. 13.3: Microfilaria of *W. bancrofti*

vi. The posterior end of this larva is pointed.

vii. The central axis of the larval body is provided with somatic cells or nuclei of cells which extend from the head to the tail end. These nuclei of cells do not extend upto the tip of the tail and these are used as definite landmarks in

the identification of the species to which the microfilaria belongs.

viii. Practically the somatic cells or nuclei of cells appear as granules.

These granules are broken at definite places and they include the following:
(a) Nerve ring, an oblique space,

(b) Anterior v-shaped spot, represents the rudimentary excretory system and

(c) Posterior v-shaped spot or tail spot, represents anus or cloaca (i.e. terminal part of the digestive canal).

ix. A few G-cells (a series of usually 4 large celled—the genital rudiments) are present near the posterior end; while G-cells 2, 3 and 4 are just in front of the anus. G-cell-1 is present further in front.

x. The body column consists of somatic cells which are interrupted only by the aforesaid land-marks and a series of G-cells 1, 2, 3,4.

xi. Near the posterior end of the larva is the anal spot. The posterior end is devoid of nuclei of cells.

The microfilariae do not further develop in the human body unless they are taken up by their intermediate host (mosquito). The larvae remain latent till a mosquito sucks them up along with the body of the host. Unless this occurs within a reasonable time, the microfilariae degenerate and perish. The life span of microfilariae in the human body has been seen to be as long as 70 days.

Male:
i. Length 2-5 cm/0.1 mm in diameter.

ii. The tail end is curved ventrally.

iii. Spicules are unequal in sizes.

iv. The caudal end is provided with 12-15 pairs of small senile papillae.

v. Vulva aperture is absent.

Female:

i. Length 8-10 cm/0.2-0.3 mm in diameter.

ii. Tail end is narrow and abruptly pointed.

iii. Absent.

iv. Only 2 rows of small sessile papillae are present.

v. Vulva with ovijector present.