

Wuchereria bancrofti (Filarial worm): - Structure Life cycle and pathogenecity: -

SYSTEMATIC POSITION:-

Kingdom:- Animalia

Division - Trophoblastic.

Section:- Pseudocolomate

Phylum - Aschelminthes.

Class:- Nematoda

Order:- Filarioidea

Family:- Filariidae

Genus:- Wuchereria

Sp.:- bancrofti.

Filaria & elephantiasis are caused by Wuchereria bancrofti. This is a nematode parasite of man.

HISTORY:- Demarquary in 1863, reported in the hydrocoel fluid of man. Wuchereria (1866) found in the chylous urine (Caco3 passing out with urine is called chylous urine). Adult female parasite was reported by Bancroft in 1876.

GEOGRAPHICAL DISTRIBUTION:- Wuchereria bancrofti is cosmopolitan in distribution except polar region. It has been reported that incidence of infection is high in China, Japan, Korea, Vesna, East Indies, Brazil, & Arabian countries. It is not found in Central USA & Medagaskar.

HABITATE:- Filarial worm is a digenetic parasite found in male and female Culex or, female Aedes & even in Anopheles.

In man Adult worm lives in Lymph gland, Lymph Vessels, Mesenteries, Connective tissue & Lymph duct. The larvae are found in blood. In the mosquito, larval forms are found which lives in pre-ventriculus, stomach, and thoracic muscles.

NATURE OF PARASITISM:- 1. It is a digenetic parasite having man as primary host and female Culex as a vector or, carrier host or, intermediate host.

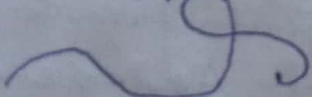
2. It is a pathogenic parasite causing filaria, elephantiasis and hydrocoel in man.
3. It is a permanent, obligatory, endoparasite of man as histozoic parasite.
4. They resides in lymph gland, lymph vessels, mesenteries, connective tissue and lymph duct.
5. They shows the nocturnal periodicity i.e they live in deep sited blood vessels in day and they migrate to superficial blood vessels in night in the skin between 10AM to 2PM.

STRUCTURAL DETAILS:-

ADULT

1. The adult filarial worm also known as "Slender worm" are long hair like transparent nematode.
2. This worm is dioecious and shows distinct sexual dimorphism i.e male and female sexes are separate.
3. This are filiform in shaped and have both ends tapering. The head end is terminated in slightly swollen form.
4. Generally male and female remain coiled together.
5. Mouth is placed anteriorly and leads into muscular pharynx which is followed by glandular pharynx.
6. Male and female filarial worm different from each other.

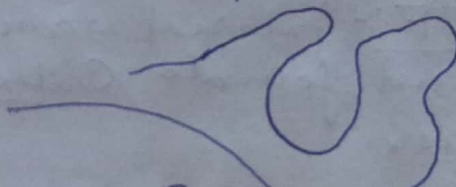
MALE



1. Smaller in size 2.5 to 4 cm

2. Posterior is curved.
3. Have to unequal copulatory spicules
4. Genital papillae present.

FEMALE



1. Bigger in size 6 to 10 cm.

2. Anterior end is straight.
3. Spicules absent.

4. Absent.
5. Gonopore anteriorly placed.

ADULT WUCHERERIA BANCROFTI

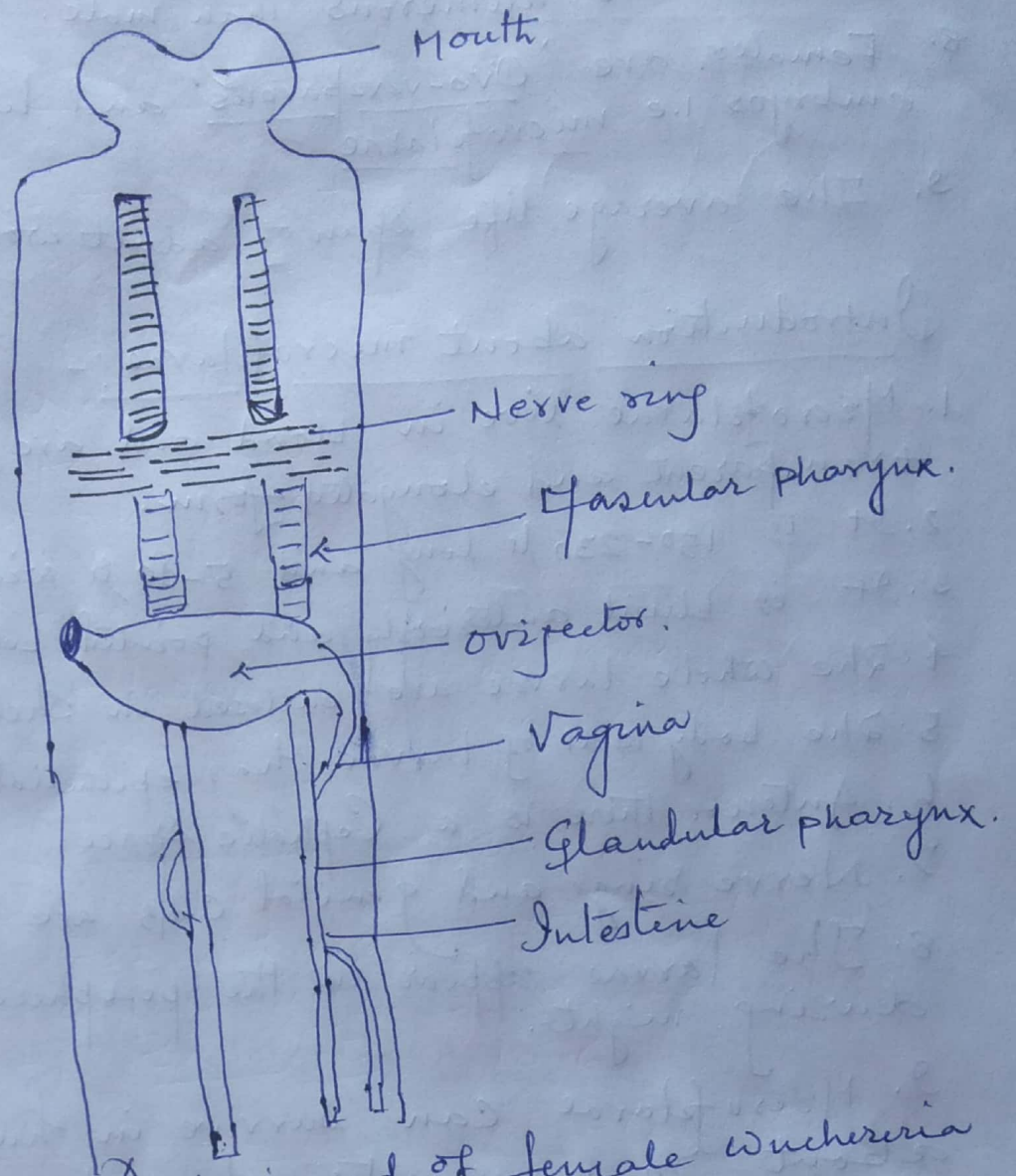
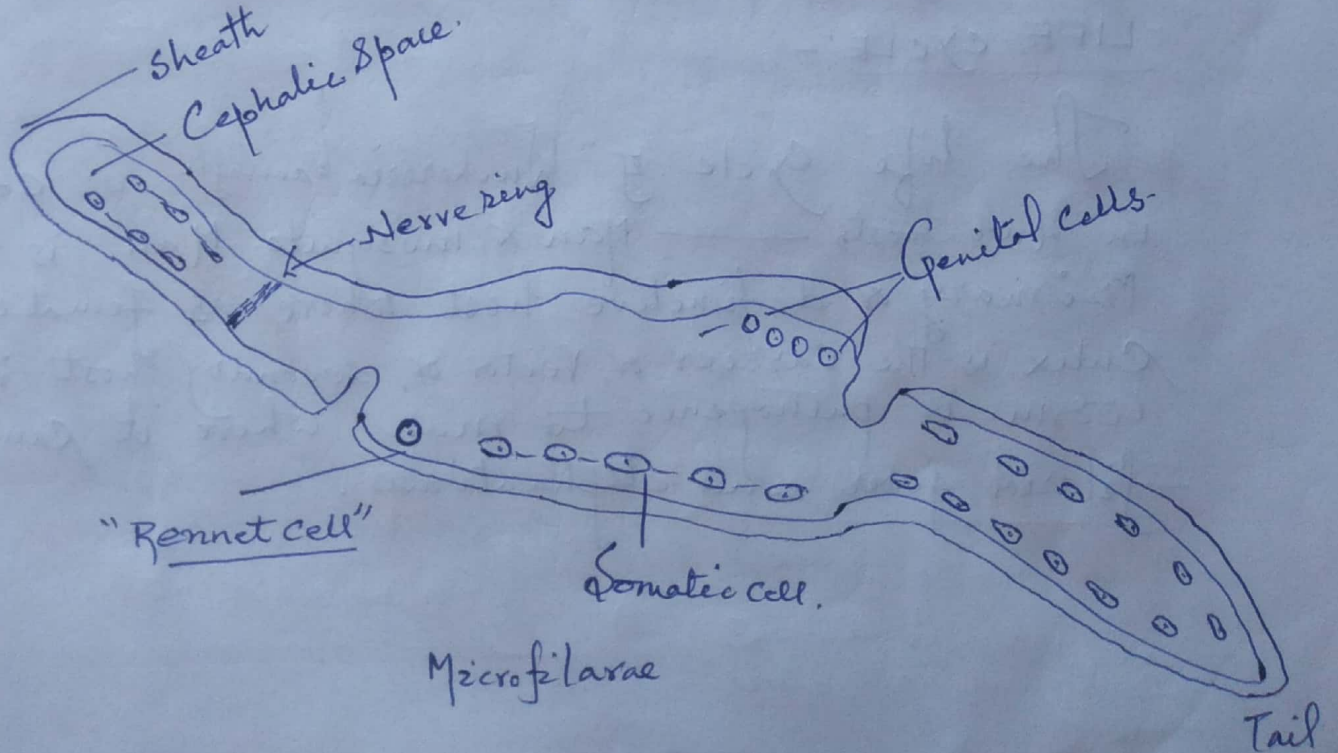


Fig. Anterior end of female *Wuchereria bancrofti*.



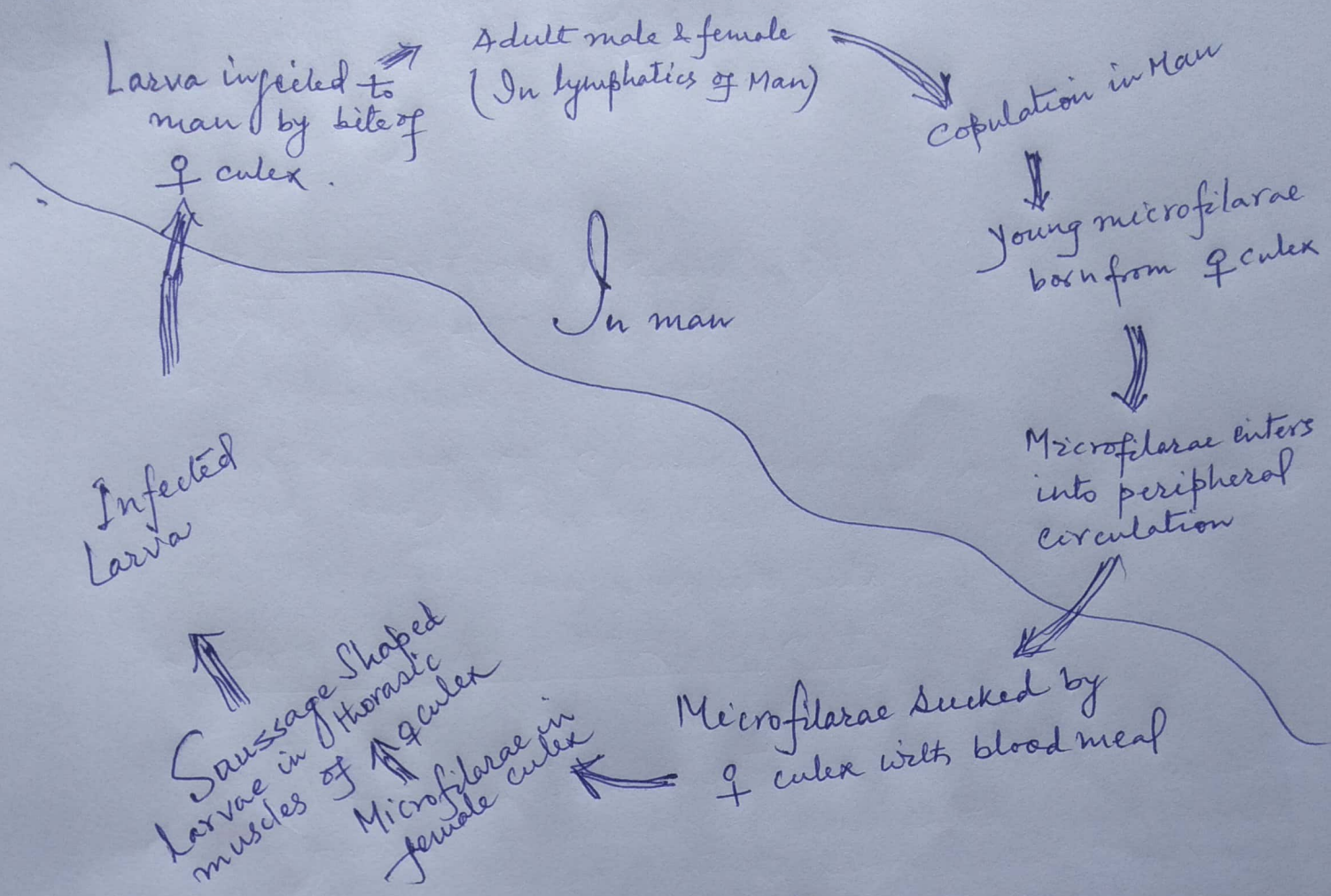
7. Females are numerous than male.
8. Females are 'Ovo-viviparous' and liberate active embryos i.e. microfilarae
9. The average life span of adult worm is 4-5 years.

Introduction about microfilarae:-

1. Microfilarae live in blood and are colourless + transparent and elongated form.
2. It is 150-230 μ long and 5-10 μ wide.
3. It is blunt anteriorly and pointed behind.
4. The whole larvae are enclosed in sheath.
5. The body wall of larvae has epithelium.
6. Anterior there is a Cephalic space.
7. Nerve ring and genital cells are present.
8. The larvae appear in the peripheral blood vessels during night.
9. Microfilarae can survive in human body for about 70 days after which they die. If not sucked by mosquito.

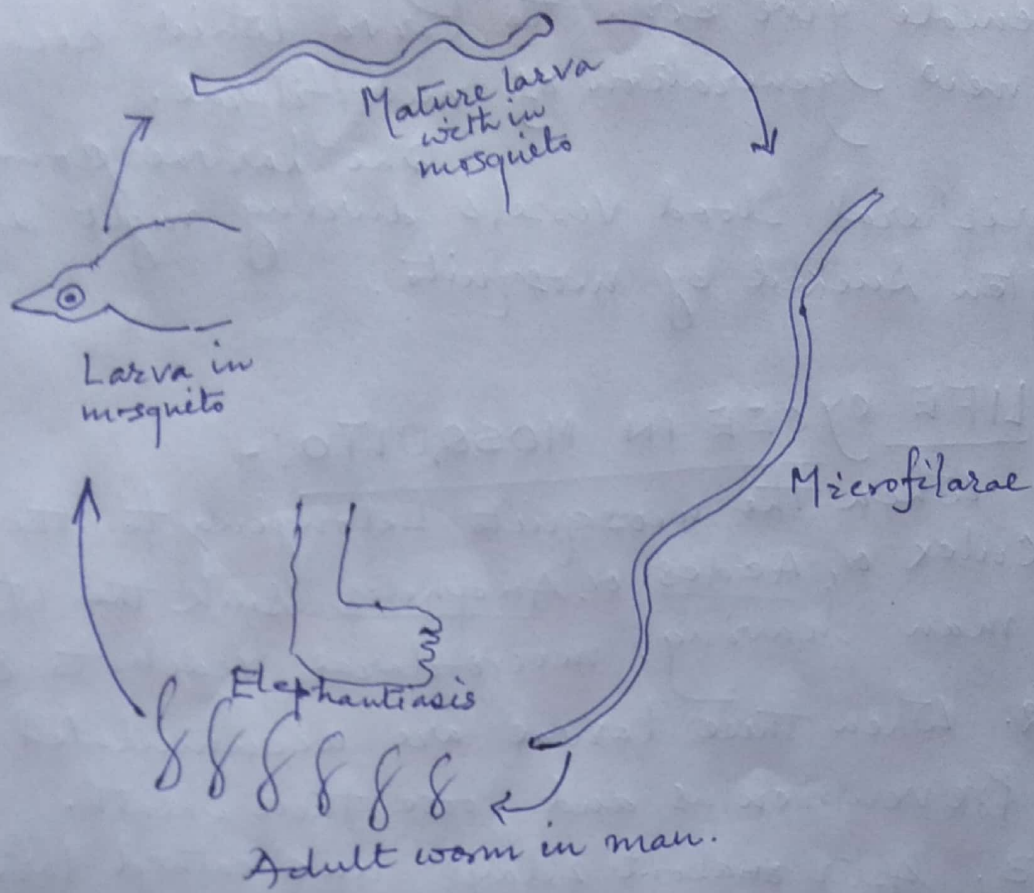
LIFE CYCLE:-

The life cycle of "Wuchereria bancrofti" is complete in two hosts — Man & mosquito. Man is the Primary or definitive host where as female Culex is the carrier or, vector or, secondary host. The worm is pathogenic to man. where it causes filarial fever and elephantiasis.



Life cycle of *W. bancrofti*.

The cycle of this worm in man as follows:-



Infection:-

When an infected female *Culex* bites a man, the 3rd stage larvae of *W. bancrofti* are deposited on the skin of man. Later on the larvae enters the body and reach the lymphatic channels. After some time they settle in inguinal or, axillary or, abdominal lymphatics.

The 3rd stage larva also known as inguinal larva are infected for man.

Maturation

After 5-18 months the microfilariae metamorphose into adult.

Reproduction:-

Adult worms undergo copulation. The female give birth to larva which become new generation of microfilarae.

The larvae come to peripheral blood vessels during night and are often sucked by mosquito.

LIFE CYCLE IN MOSQUITO:-

1. When the mosquito belonging to the genus Culex or, Aedes or, Anopheles suck the blood of man having, microfilarae reach to stomach.
2. When these larvae are accumulated in Pre-ventriculus and loose their sheath.
3. After ~~about~~ 2 days, unsheathed larvae changes into first stage having rudimentary gut.
4. In 3-7 days, larvae moult and become 2nd stage of larvae.
5. On the 10th day, the digestive system body cavity and genital develops and 3rd stage larvae are produced.
6. During changes of larval stage length go on increasing.

SYMPTOMS (Pathogenicity)

1. Filarial fever
2. Head ache
3. Lymphangitis
4. Lymphadenitis.

Adult worm ~~is~~ coiled up in the lymph gland, Lymph passage of man where they often obstruct the flow of lymph in lymph gland and lymph vessels causes the disease ~~lymphadenitis~~ lymphadenitis and lymphangitis respectively.

PREVENTION (Prophylaxis)

1. To kills the mosquito.
2. Uses mosquito net.
3. Cleaning of canals and not accumulation of dead and decaying substance.
4. Protection from mosquito bite.

NOCTURNAL PERIODICITY

Nocturnal periodicity is the process in which microfilarae larva live in deep sited blood vessels by day and they migrate to superficial blood vessels by night in the skin between 10PM to 2AM, that very process repeated every day, so called "Nocturnal Periodicity"
