Lymphatic Filariasis  Elephantiasis

*Wuchereria bancrofti*
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- Spread by several species of night-feeding mosquitoes
- Causes lymphatic filariasis, also known as Elephantiasis
- Humans are the definitive host for the worms that cause lymphatic filariasis, There are no known reservoirs for W. bancrofti
- Intermediate host, W. bancrofti is transmitted by Culex, Aedes, and Anopheles species
Morphology

- *W. bancrofti* is a sexually dimorphic species.
- The adult male worm is long and slender, between four and five centimeters in length, a tenth of a centimeter in diameter, and has a curved tail.
- The female is six to ten centimeters long, and three times larger in diameter than the male.
- Microfilariae are sheathed, and approximately 245 to 300 µm in length.
LIFE CYCLE

- W. bancrofti, acquired via the bite of mosquitoes.
- When mosquitoes bite humans, they deposit larvae into the skin.
- These larvae travel and enter local lymphatic vessels. Over a period of approximately nine months, these larvae undergo a series of molts and develop into mature adult worms,
- These adults reside in the lymphatics, generally several centimeters from lymph nodes. They survive for approximately five years (occasionally up to 12 to 15 years), during which time male and females worms mate and produce microfilariae.
- Female parasites can release more than 10,000 microfilariae per day into the bloodstream. These microfilariae are also known as embryonic
LIFE CYCLE

• Mosquitoes, which bite infected individuals, can take up these circulating microfilariae. Within the mosquito, these embryonic larvae develop into second then third stage larvae over a period of 10 to 14 days. The mosquito is then ready to bite and infect a new human host, thereby completing the life cycle.

• The interval between acquisition of infective larvae from a mosquito bite and detection of microfilariae in the blood is known as the prepatent period. This interval is usually approximately 12 months in duration.
Symptoms

• 1. Asymptomatic: patients have hidden damage to the lymphatic system and kidneys.
• 2. Acute: attacks of ‘filarial fever’ (pain and inflammation of lymph nodes and ducts, often accompanied by fever, nausea and vomiting) increase with severity of chronic disease.
• 3. Chronic: may cause elephantiasis and hydrocoele (swelling of the scrotum) in males or enlarged breasts in females.
DIAGNOSIS

• Blood examination for detection of microfilariae should be performed in all individuals in whom the diagnosis of filariasis is suspected. Bancroftian and Brugian filariasis tend to show nocturnal periodicity. Blood should be drawn between 10 p.m. and 2 a.m. because the greatest number of microfilariae can be found in blood during this peak biting time of the mosquito vectors. The pattern of periodicity can be reversed by changing the patient's sleep-wake cycle.

• Antibody tests — Serologic tests for filarial antibodies which detect elevated levels of IgG and IgE are available

• Antigen tests — Different methods for detection of antigen in the blood have been attempted using various monoclonal antibodies.
TREATMENT

• Diethylcarbamazine — DEC is not distributed for use in the United States but can be obtained from the Centers for Disease Control and Prevention (CDC)

• Ivermectin — Studies have established that ivermectin given as a single dose in Bancroftian filariasis reduces microfilaremia by approximately 90 percent even one year after treatment

• Albendazole — has also been used in filarial infections. Prolonged courses of high dose albendazole have a significant macrofilaricidal effect and result in a gradual decrease in microfilarial levels.