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Discipline: BS MLT Assignment:

Clinical mycology and

Parasitology Submitted to:

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Tissue Nematodes

WUCHERERIA

Disease

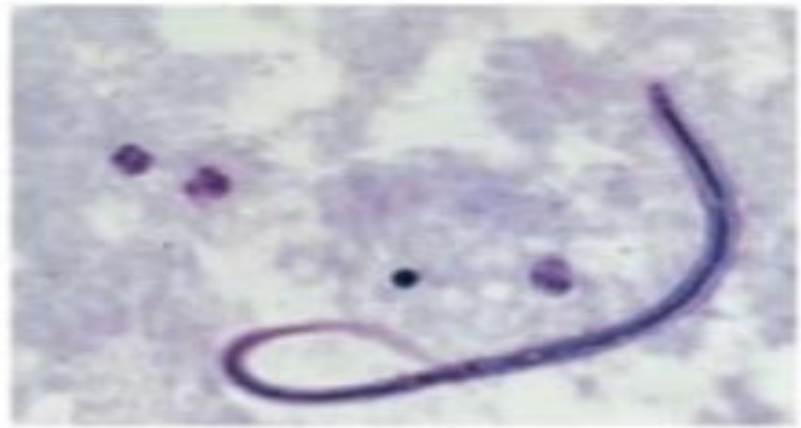
- Wuchereria bancrofti causes filariasis
- Elephantiasis is a striking feature of this disease

Important Properties

- Humans are infected when the female mosquito (especially Anopheles and Culex species) deposits infective larvae on the skin while biting
- The larvae penetrate the skin, enter a lymph node, and, after 1 year, mature to adults that produce microfilariae
- These circulate in the blood, chiefly at night, and are ingested by biting mosquitoes
- Within the mosquito, the microfilariae produce infective larvae that are transferred with the next bite
- Humans are the only definitive hosts.

Laboratory Diagnosis

Thick blood smears taken from the patient at night reveal the microfilariae



ONCHOCERCA

Disease

- Onchocerca volvulus causes onchocerciasis (river blindness)

Important Properties

- Humans are infected when the female blackfly, Simulium, deposits infective larvae while biting
- The larvae enter the wound and migrate into the subcutaneous tissue, where they differentiate into adults, usually within dermal nodules
- The female produces microfilariae that are ingested when another blackfly bites
- The microfilariae develop into infective larvae in the fly to complete the cycle
- Humans are the only definitive hosts

Pathogenesis & Clinical Findings

- Inflammation occurs in subcutaneous tissue, and pruritic papules and nodules form in response to the adult worm proteins
- Microfilariae migrate through subcutaneous tissue, ultimately concentrating in the eyes
- There they cause lesions that can lead to blindness
- Loss of subcutaneous elastic fibers leads to wrinkled skin, which is called "hanging groin" when it occurs in the inguinal region
- Thickening, scaling, and dryness of the skin accompanied by severe itching are the manifestations of a dermatitis often called "lizard skin."

Laboratory Diagnosis

- Biopsy of the affected skin reveals microfilariae
- Examination of the blood for microfilariae is not useful because they do not circulate in the blood
- Eosinophilia is common. Serologic tests are not helpful

Filarial worms

- Filarial worms are thread-like nematodes of which there are at least 8 species for which humans, especially in tropical regions, are the definitive host.

- Approximately 250 million people worldwide are infected with these worms which are spread by mosquitoes.

- Different species inhabit different locations in the body. Some live in the lymphatic system, others subcutaneously and others in the abdominal cavity.

SUBCLASS: SPIRURIA

- **Suborder**: Spirurida
  - **Superfamily:**
    - **Filarioidea** → **Species**: *Onchocerca volvulus* , *Loa loa*, *Mansonella* , *Dirofilaria repens*, *Wuchereria bancrofti*, *Brugia malayi*, *Brugia timori*
    - **Thelazioidea** → **Species:** *Gnathostoma spinigerum*
- **Suborder**: Camallanina → **Species**: Dracunculus medinensis

Pathogenesis & Clinical Findings

- Adult worms in the lymph nodes cause inflammation that eventually obstructs the lymphatic vessels, causing edema. Massive edema of the legs is called elephantiasis. Note that microfilariae do not cause symptoms
- Early infections are asymptomatic. Later, fever, lymphangitis, and cellulitis develop. Gradually, the obstruction leads to edema and fibrosis of the legs and genitalia, especially the scrotum
- Elephantiasis occurs mainly in patients who have been repeatedly infected over a long period
- Tropical pulmonary eosinophilia is characterized by coughing and wheezing, especially at night
- These symptoms are caused by microfilariae in the lung that elicit an immediate hypersensitivity reaction characterized by a high immunoglobulin E (IgE) concentration and eosinophilia

Thank You