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Unsheathed skin Microfilariae

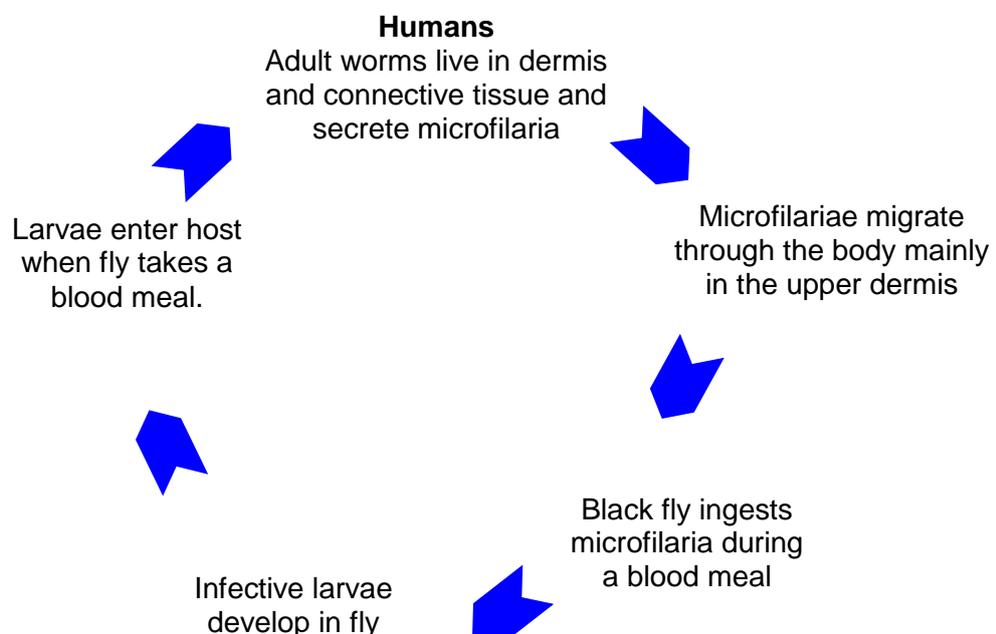
The main species of microfilariae found in the skin and tissue are *Onchocerca volvulus* and *Mansonella streptocerca*. Microfilariae of *Onchocerca volvulus* and less often, *Mansonella streptocerca* migrate through the dermis causing itching and skin texture changes and occasionally arrive in the eye where they cause blindness. Detection of these microfilariae is from skin snips or nodule biopsies. When high numbers of microfilariae are present, they can occasionally be found in the blood and urine.

Onchocerca volvulus

Introduction

Onchocerca volvulus is mainly found in West Africa and Central and South America. Onchocerciasis, also known as river blindness, is a major public health problem, especially in West Africa, there an eradication program has been established.

Life cycle



Morphology

The microfilariae of *O. volvulus* are unsheathed and are usually found in the dermis. They measure between 221 - 287µm long.

Clinical Disease

Light infections may be asymptomatic however heavier infections cause a variety of symptoms including dermatitis, onchocercomas, lymphadenitis and blindness.

Laboratory diagnosis

1. Analysis of Skin Snips

Small amounts of skin are collected by using a needle to raise the skin and then to slice about 1 mg of skin to a depth of 0.5mm. Snips are collected from several sites, usually the shoulders or the buttocks and sometimes the chest and calves. The snips are placed immediately in 0.5 ml normal saline in a microtitre plate and left for 4 hours to allow the microfilariae to migrate out of the tissues. After 4 hours, the wells are examined using an inversion microscope. The microfilariae should still be moving and can be identified from the table below. The microfilariae can also be collected by filtration or centrifugation and the deposit containing microfilariae can be stained with Giemsa at pH 6.8.

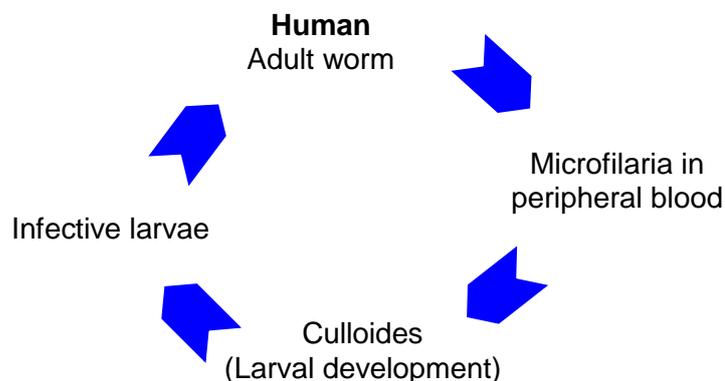
2. Analysis of Biopsies

Biopsies of tissue nodules can be dabbed on to a slide to produce impression smears and then stained with Giemsa stain at pH 6.8 for the presence of microfilariae.

Mansonella streptocerca

Microfilaria of *M. streptocerca* were first reported in the skin of a West African patient in 1922. These microfilaria are primarily found in the skin but have been also reported in the blood. Infection is characterised by pruritic dermatitis and hypopigmented macules.

Life cycle



Laboratory diagnosis

M. streptocerca can be diagnosed by demonstrating the microfilaria in a skin snip. Snips are collected from several sites, usually the shoulders and buttocks and sometimes the chest and calves. The snips are placed immediately in 0.5ml of 0.9% sodium chloride in a microtitre plate

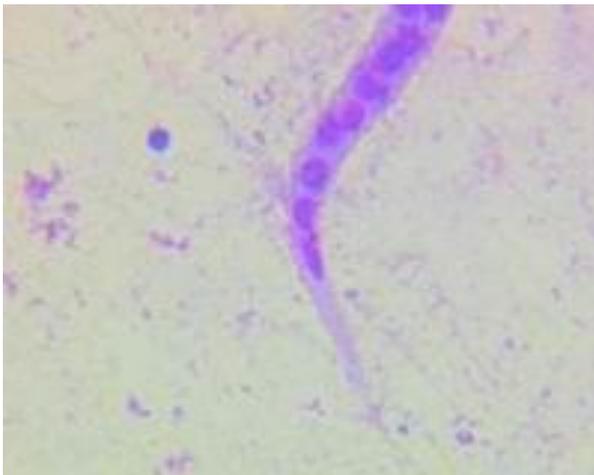
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Characteristics of *Onchocerca volvulus* and *Mansonella streptocerca*

| | <i>Onchocerca volvulus</i> | <i>Mansonella streptocerca</i> |
|-------------------------------|---|--------------------------------|
| Distribution | Tropical Africa, Central and South America | West Africa |
| Vector | <i>Simulium</i> spp. | <i>Culicoides</i> spp. |
| Adult location | Subcutaneous nodules | Cutaneous connective tissue |
| Microfilariae location | Skin | Skin |
| Microfilariae size | 280 - 330 um | 180 - 240 um |
| Morphology | Broad spatulate head No sheath, pointed tail | Curled tail No sheath |
| Tail nuclei | Tail free from nuclei | Nuclei extend to tail tip |



tail of *Onchocerca volvulus*