

## **ONCHOCERCIASIS**

Synonym – River Blindness

Presenter – Dr Mansuetus Mboya

## **Objectives**

At the end of the session Participants should be able to:

- Define Onchocerciasis
- Describe the epidemiology of onchocerciasis
- Describe life cycle, transmission and distribution
- Describe clinical features
- Diagnose onchocerciasis
- Identify treatment of onchocerciasis
- Describe prevention and control

## **Definition**

Onchocerciasis is a chronic infection (disease) caused by *onchocerca volvulus* (tissue nematode) mainly affects the skin and eyes.

## **Epidemiology**

- It is a major cause of blindness in some parts of Tropical Africa
- Very common in Volta river basin in West Africa
- It is estimated that about 17.5 million people Worldwide are infected with *onchocerca volvulus*
- More than 95% of all cases are in Africa zone that spreads from West to East, this band extends between 15°N and 15° S
- Nigeria accounts for over one third of global prevalence
- NB: In Tanzania the disease is found in Highlands with fast running rivers Mahenge, Mbeya and some foci in Tanga and Kilosa

## **Vector**

- The vector of this disease is small black fly *Simulium damnosum*.
- Fly lay eggs in fast running rivers or turbulent areas with high oxygen tension.
- Eggs need oxygen for development that's why the disease is found in running Mountain rivers.
- The vector can fly 40 – 150 Kilometers.

## The Life cycle

- Female Simulium fly suck microfilaria from the blood of infected person  
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  - Microfilaria develops into the infective form in the fly (6 – 8 days)  
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  - Infective larvae is injected to a new person in the process of feeding  
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  - The larvae develops into adult worm in the nodules of human lymphatic  
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  - Adult worm produces microfilaria  
↓  
Simulium fly in the course of feeding can suck microfilaria.
- NB: The adult worm can live for 11 – 18 yrs in subcutaneous tissue of skin  
Female worm produces thousands of microfilaria that can live for about 2 yrs.

## CLINICAL FEATURES

- Onchocerciasis has three different clinical presentations, but the main clinical manifestations are Dermatitis, Eye lesions and skin nodules.

## SKIN LESION - DERMATITIS

- Dermal changes occur due reaction of microfilaria in the epidermis
- The changes vary from few papules to extensive pigmentary and chronic atrophic changes of presbyderma and (premature aged appearance)
- Frequently a combination of atrophy, hypo and hyper pigmentation exist in same person.
- Papules are due to micro abscess formation, which disappear within few days or spread.
- The rashes are confined to one anatomical quarter of the body or to a butterfly distribution on the buttocks itching can be very intense



## EYE LESION

- Many changes can occur in both anterior and posterior segments in the eyes of infected individual.
- Anterior segment lesions
- Punctuate keratitis (snow flake opacities) as a result of acute inflammatory reaction around microfilaria
- Sclerosing keratitis, extensive scarring of the cornea → Blindness.
- Microfilaria dying in ciliary body give rise to iridocyclitis and formation of synechia, inflammation of uveal tract also contributes to iridial pathology

## Posterior segment lesions

Optic nerve atrophy, choroidoretinitis leads to blindness

NB: The main blinding lesions are sclerosing keratitis, iritis, choroidoretinitis and optic nerve atrophy.

## NODULES

- Nodules are subcutaneous granulomas resulting from the tissue reaction around adult worms.
- They are painless, round or oval, firm, smooth vary in size from few millimeters to several centimeters and often-matted together in clumps.
- In Africa 80% of nodules occur over body prominences of the pelvic girdle iliac crest, coccyx, sacrum and greater trochanter rarely occurs on elbow, shoulder, and scapular skull and over the ribs.

## DIAGNOSIS

- Clinical presentation-typical skin changes and subcutaneous nodules
- Skin snip to demonstrate microfilaria-best area iliac crest or below
- Mazzoti test-administration of 50mg Diethylcarbamazine DEC by mouth the death of microfilaria will lead to severe body itching between 20 min to 2hrs later.
- DEC lotion can also be used but causes severe reaction than oral
- Mazzoti patch test with topical application
- Immunodiagnostic e.g. ELISA
- Polymerase Chain Reaction (PCR)

## TREATMENT

Drug of choice Mectizan (Ivermectin) single oral dose 150ug/ Kg BW

Nodulectomy especially of head as they increase the risk of blindness

# COMPLICATIONS

Blindness

Disfigured skin

## PREVENTION AND CONTROL

Mass treatment With Ivermectin

Safe water supply

Health education about the disease  
prevention