



Elevated Prevalence of Onchocerciasis Associated with WHO Undergrown Development of Contaminated Microfilaria

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ABOUT THE STUDY

Onchocerciasis is a Neglected Tropical Disease (NTD) caused by the parasite *Onchocerca volvulus*. It is transmitted by repeatedly chewing the *Simulium* genus. The disease is also called as “river blindness” because the black flies that transmit the infection live and breed near fast-flowing streams and rivers, usually near remote rural villages. Infections can cause visual impairment and sometimes blindness. In addition, onchocerciasis can cause skin disorders such as severe itching, rashes, or lumps under the skin. Worldwide, onchocerciasis is the second most infectious cause of blindness after trachoma.

Onchocerciasis is an eye and skin disorder. Symptoms are caused by microfilaria. Microfilaria travels within the subcutaneous tissue of the human body and causes a violent inflammatory reaction when it dies. Infected individuals may have symptoms such as severe itching and various skin changes. Infected individuals can also develop eye lesions that can lead to visual impairment and permanent blindness. Most often, nodules form under the skin around the adults.

WHO recommends treating onchocerciasis with ivermectin at least once a year for 10 to 15 years. If *Onchocerca volvulus* coexists with loa loa, treatment strategies may need to be coordinated. Loa loa are parasitic roundworms endemic to Angola, Equatorial Guinea, Gabon, Cameroon, the Central African Republic, the Democratic Republic of the Congo, Nigeria, Chad, and South Sudan. Treatment of high-level individuals' lores in the blood can cause serious adverse events. This treatment kills larvae, but not adults. Affected countries should follow the recommendations of the Mectizan Expert Committee (MEC)/APOC for the prevention and management of serious adverse events. There is no vaccine for this disease. Prevention is to avoid being bitten by flies. This may include the use of insect repellent and suitable clothing. Other efforts include reducing fly populations by spraying pesticides. In many parts of the world, efforts are underway to eradicate the disease by treating the entire group twice a year.

Skin involvement usually includes extreme itching, swelling, and inflammation. A grading machine has been advanced to categorize the diploma of pores and skin involvement:

- Acute papular acrodermatitis–scattered pruritic papules.
- Chronic papular onchodermatitis – large papules, ensuing in hyperpigmentation.
- Lichenified acrodermatitis–hyperpigmented papules and plaques, with edema, lymphadenopathy, pruritus, and not unusual place secondary bacterial infections.
- Skin atrophy–lack of elasticity, the pores and skin resembles tissue paper, ‘lizard pores and skin’ appearance.
- Depigmentation–“leopard pores and skin” appearance, typically on the anterior decreased leg.
- Glaucoma effect–eyes malfunction, start to see shadows or nothing.

The Transmission of the Onchocerciasis is spread through the bite of female blackflies that breeds in swiftly flowing streams. The infection cycle begins when gnats bite an infected person and become infected with an immature form of worm called “microfilaria”. The microfilariae develop into larvae in the fly. When the fly bites any other person, larvae are exceeded into that person’s pores and skin. The larvae circulate beneath the pores and skin and shape lumps (nodules), wherein they change into grownup worms in 12 to 18 months. Adult female worms can live up to 15 years in these nodules. After mating, mature female worms lay eggs and grow into microfilaria to produce worms. Worms can produce 1,000 microfilariae daily. Thousands of microfilaria move through the tissues of the skin and eyes and cause illness.

Subcutaneous nodules, called “onchocerciasis,” are the most commonly found on bone ridges and are another commonly reported symptom of onchocerciasis. The value and reliability of oral diagnosis by obtaining a history of nodules in areas where the disease is highly endemic are explained elsewhere. In Africa, onchocerciasis is commonly found in the ridges of the trunk and hip bones, but in South America, it is also called “Roble disease” and the main strains usually have nodules on the head and

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shoulders. Cases of tumor cytomias appearing as a mass in the chest or a deep nodule in the pelvis have been reported. Angiogenic proteins produced by adult worms are thought to contribute to the formation of nodules. It is estimated that 1600 microfilaria are produced per adult per day, with steady-state total daily sales of 10,000-300,000 microfilaria and a maximum total load of 150 million. The presence of oncoscoloma does not correlate with the burden of microfilaria.

The Mass Drug Administration (MDA) has had a significant impact on the burden of onchocerciasis in countries previously under the authority of the African Programme for Onchocerciasis Control (APOC). In some countries where the infection is expected to continue until 2030, increased MDA can be combined with local vector control efforts or the introduction of new drugs to eliminate cases of residual infection and illness.