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Traveler Information

FILARIAL INFECTIONS

This article includes **lymphatic filariasis**, **onchocerciasis**, and **loiasis**.

INTRODUCTION

Humans develop filarial infections through the bite of infected flies, mosquitoes, or midges. Larvae, which later develop into adult worms, are transmitted to humans by the biting fly or mosquito. The live filarial worms usually cause little harm themselves, but dead worms can cause an inflammatory response. The symptoms and severity of the disease depend upon the site of the worms and whether they are adult worms or larvae, the number of worms in the body, and whether the infection is acute or chronic. Travelers usually have light infections that often include acute allergic reactions affecting the skin and underlying tissues, lymph system, and occasionally the eye.

- Lymphatic filariasis is caused by a round worm. Humans become infected when bitten by an infected mosquito.
- Loiasis is caused by a parasite (*Loa loa*). Humans become infected when bitten by an infected deer, mango, or mangrove fly.
- Onchocerciasis is caused by a round worm. Humans become infected when bitten by an infected blackfly or buffalo gnat.

EPIDEMIOLOGY

The distribution of the filarial species is shown in Table 1. Residents in endemic areas build up heavy worm loads over time and by early adult life almost all may be infected. Travelers are much less likely to be infected. They need to be in the right place at the right time, behave in the right way, and even then be unlucky.

Travelers can be infected with onchocerciasis and loiasis, especially if they are living in endemic areas and work outdoors as agriculturalists, foresters, conservationists, zoologists, botanists, prospectors, miners, film crews, etc., or are members of overland expeditions across Africa. Lymphatic filariasis in travelers is extremely rare (or unheard of), although many returned travelers with non-specific lymphedema may present for exclusion of this infection. Because of the long incubation period, onchocerciasis or loiasis may present years later in a distant country where the condition is unknown.

RISK FACTORS

The important risk factors for filarial infections are:

- Staying for a long time in an endemic area during the season of transmission (*see Table 1*)
- Failing to protect oneself against the biting insects
- Outdoor occupations in the forest (loiasis) or in rocky river basins (onchocerciasis)
- Sleeping at night unprotected against mosquitoes (lymphatic filariasis)

Because of the long incubation period, symptoms may occur months or years later in a distant country where the condition is unknown. Diagnosis may be delayed due to the fact that some physicians in non-endemic countries aren't familiar with these diseases. It is important to alert a physician to the possibility of filariasis if symptoms are present. A delay in diagnosis and treatment can lead to the development of complications and chronic symptoms.

SYMPTOMS

Early filarial infections, such as are seen in travelers, are usually confined to one site or a few sites of the body and are commonly associated with acute allergic responses, including itching, rash, and swelling in that area. Many early infections are symptomless and

are found during post-travel medical screening.

- Early symptoms of lymphatic filariasis include recurring chills, headache, fever, pain and swelling of lymph nodes in the arms, legs, or scrotum. Chronic disease produces obstructions in the lymph system, causing elephantiasis. Drug treatment is available.
- Early symptoms of onchocerciasis include itching of the skin or eye, rash, skin nodules, and swelling of one limb. Drug treatment is available.
- Early symptoms of loiasis may be recurrent itchy cellulitis, subcutaneous swelling, or a worm seen migrating beneath the conjunctiva of the eye. Localized pain with itching may precede swelling. Drug treatment is available.

PREVENTION STRATEGIES

For travelers who will be in a risk area, personal protection measures and insect precautions are vital. For long-term visitors working in at-risk situations, preventive medication (diethylcarbamazine 300 mg weekly) has been shown to prevent loiasis. (This regimen is not suitable for short-term travelers.) The best prevention for short-term travelers is to avoid travel to at-risk places during seasons of transmission. However, if travel is unavoidable, stay there as short a time as possible and if possible avoid being bitten by the insects that transmit the disease, especially during peak biting times (*see Table 1*). Wear long sleeves and trousers and use insect repellents and sleep under permethrin-impregnated bed-nets to reduce mosquito bites.

NEED FOR MEDICAL ASSISTANCE

Individuals who travel to a risk area, should remember that the disease has a long incubation period and should be watchful for symptoms of early disease. The risk of infection is low but the available means of individual prevention are not perfect. Travelers who have been to a risk area, should tell a physician, even if it was months or years ago. Remind him or her of the risk of filariasis and the fact that there is a delay in symptoms. A blood test performed 1 year after travel, or sooner if there are symptoms, will detect most individuals with early filarial infections. Effective treatment is available for all 3 types of filarial infections.

TABLE 1

Disease	Biting insect	Peak biting times	Risk areas
Onchocerciasis	Blackflies or buffalo gnats. (Flies breed in fast-flowing, well-aerated fresh water.)	Flies and gnats bite throughout the day, and especially at dawn and dusk.	Widespread in the river basins and forests of tropical sub-Saharan Africa and Sudan. Hill valleys of east and central Africa and Yemen. Small foci in Mexico, Guatemala, and northwest South America are nearly eradicated and not of concern to travelers.
Loiasis	Deer, mango or mangrove flies. (Flies breed on vegetation overhanging pools of water.)	Flies bite throughout the day, and especially around noon.	Limited to rain forests of west and central Africa (notably Nigeria, Cameroon, Gabon, Equatorial Guinea, Republic of the Congo, Democratic Republic of the Congo, and northern Angola).
Lymphatic Filariasis	Mosquitoes. (Mosquitoes have a wide	Most mosquitoes bite by night. A few bite by day.	Tropical coasts of Caribbean, South America, Africa, India, east and Southeast Asia to Papua New Guinea, Pacific Islands

	range of breeding sites.)		