

A STUDY OF FILARIASIS—ITS CAUSE AND PREVENTION

(Translation of a Pamphlet Written for Educational Purposes)

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Filariasis is caused by a microscopic parasite of the nematode order called filaria. The name filaria comes from the Latin, *filum*, meaning thread and when the worm is found in the lymphatic vessels or glands, where it generally resides, it appears in the form of a thread three to four inches long. The filaria reproduces abundantly in the lymphatic glands and the larvæ follow the lymphatic current until they reach the blood where they appear during the night in great numbers. These larvæ, or embryos of filaria found in the blood are called microfilarias being invisible to the naked eye, and about three-tenths of a millimeter long. On examining through the microscope a drop of blood which has been taken at night from the person suspected of having filariasis an abundance of these larvæ will be found moving about actively. The blood of patients suffering from filariasis is full of these larvæ. During the day they remain within the viscera, and at night they appear in the blood circulation.

Filariasis is transmitted from one person to another by a mosquito. This insect bites a person suffering from the disease, extracts some larvæ from the blood which it injects later into another person. These data are of great importance as on them are based all the measures instituted to avoid the dissemination of the disease. Filariasis is developed exclusively as a result of the mosquito bite. Without the mosquito the larva known as microfilaria could not develop into an adult filaria; and with the extermination of the mosquito filariasis would no longer exist.

We have said that the mosquito takes up the larvæ of filaria into its organism after biting a person suffering from filariasis. This generally occurs at night when mosquitoes are more active and the larvæ are circulating in the blood.

After the mosquito has injected the embryo of filaria into a person, some time may elapse before any symptoms of the disease appear. The first symptom is usually a high fever and an erythema of the leg. The temperature persists several days. The leg swells considerably; is painful and inflamed, and the patient suffers greatly during the attack, until the symptoms subside. After this the affected leg usually remains a little larger than the other, the skin is thicker and

rougher, but aside from this the patient improves and seems to enjoy normal health until another attack occurs. These attacks of fever and streaks of redness on the leg or other parts of the body may occur twice a month, once a month, every six months or perhaps once a year; and according to the frequency of the attacks the affected leg becomes larger and larger until its proportions are enormous. Although the inflammation occurs with greater frequency on the legs, other parts of the body may also be affected, especially, the arms, sometimes the breasts of women and the genital organs of both sexes.

To these extreme swellings of different parts of the body the name of elephantiasis has been applied. They have commonly been called erysipelas, but erysipelas is a different disease, caused by a microbe called "*Streptococcus erysipelatis*" and has absolutely no relation to filariasis. So, the correct name of these superficial inflammations and marked swellings caused by filaria is elephantiasis and not erysipelas.

Sometimes the person attacked by filariasis passes milky colored urine. This symptom is generally preceded by pain in the lower part of the abdomen or the groins. The milky color of the urine is due to the rupture of lymphatic vessels of the urinary bladder which are distended because of the lymphatic current being obstructed by microfilarias. The urine may retain its milky color for some weeks or months, after which it becomes clear, and then milky or turbid at intervals of several days. This condition may continue for some years. In some cases a marked retention occurs. This is caused by the formation of clots in the urinary bladder and occasions intense pain. Very often patients suffering from filariasis manifest enlargement of the glands in the groins or in other parts of the body.

Sometimes the filariæ lodged in the human system die and the residue of the dead nematodes incite infections which produce filaric abscesses; in others the superficial lymphatic vessels become inflamed—more commonly in the legs—forming a chord which is perceptible to touch and very painful. The skin covering the inflamed vessels and glands becomes red and tense; and chills and fever follow. The temperature may last some days followed by profuse perspiration; the fever lowers, the inflammation disappears and convalescence sets in. This inflammation of the lymphatic vessels is called lymphangitis and recurs frequently at intervals of days, weeks or months. The chills and temperature which accompany this disease are often confused with symptoms of malaria.

Thus we see that filariasis is manifested in various ways. The diagnosis is often made with great difficulty, even by experts. The

surest way of ascertaining whether or not the patient has filariasis is to have a sample of blood examined at the laboratory. If filaria is in the blood an examination of this kind will reveal the microfilariae. It is absolutely necessary that the blood sample be taken at night because as we have already said the microfilariae only appear in the blood circulation at that time.

During the day they hide in the viscera. They have a special predilection for the lungs and the large thoracic vessels. So if the patient suspected of having filariasis has a blood sample taken during the day, probably no microfilariae will be found while if the sample is taken at night, still better at midnight they may be found.

As filariasis is transmitted by the mosquito its extermination would eradicate the disease. At the same time malaria which is so common in Porto Rico would be eradicated, and the process employed in the extermination of the mosquito would also destroy the larvæ. Great care should be taken by those who suffer from filariasis to use a mosquito net every night, due to the fact that the mosquito extracts the microfilaria at night and in this way the disease is propagated.

There is very little to suggest for the treatment of filariasis. The science of medicine has, thus far, been unable to find any way to kill the filaria once it is lodged in the human organism. Many drugs are recommended but none are curative. Arsenic is perhaps the most useful remedy to-day. Various operations are recommended for elephantiasis but the results obtained are only paliative.

Perhaps the best advice to give a person suffering from filaria is to go to a cool climate where there are no mosquitoes. At least in this way the patient avoids new infections and ceases to jeopardize those who live near him. Patients usually show a decided improvement when they carry out this method.

