LYMPHATIC FILARIASIS

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Lymphatic filariasis is a mosquito borne disease having a very ancient history. It is caused by a nematode parasite transmitted by a mosquito.

Sri Lanka has had two forms of human filariasis caused by the parasite *Brugia malayi* transmitted by *Mansonia* mosquitoes and *Wuchereria bancrofti* transmitted by the mosquito *Culex quinquefasciatus*.

Since 1965 no cases of Brugian filariasis have been reported from Sri Lanka. Present problem is due to Bancroftian filariasis (urban) and the endemic area is confirmed to three provinces namely Western, Southern and North Western exposing a population of 9.5 million at risk.

Earliest reference to this disease was made in the 6th century B.C. in the Vinaya Pitaka, which contain rules for ordination of Buddhist monks. Earliest scientific information regarding the disease was available only in 2879 A.D. Historical evidence supports the view that Brugian filariasis was introduced in the 12th century A.D. by the Malays and Bancroftian filariasis in the 15th century A.D. by the Chinese both as a result of foreign invasions.

The prevalence and distribution of filariasis was known only after 1914, subsequent to the survey carried out by Manson Bahr. The distribution on an island wide basis was not known until 1939 when Dassanayaka completed his comprehensive survey. This survey revealed the presence of *B.malayi* infection in several foci in five provinces and *W. bancrofti* infection in the towns of Galle and Matara. In 1947 a special campaign was established to deal with this problem. Subsequent to control measures adopted against the parasite and the vector the disease was brought under control after two years and since 1965 no cases of brugian filariasis have been reported. Since then the problem is due to bancroftian or urban filariasis.

During the early stages of the disease the patients are asymptomatic and are a source of danger to the society as they are capable of transmitting the disease. These asymptomatic carriers often found to have damaged lymphatic and renal systems.

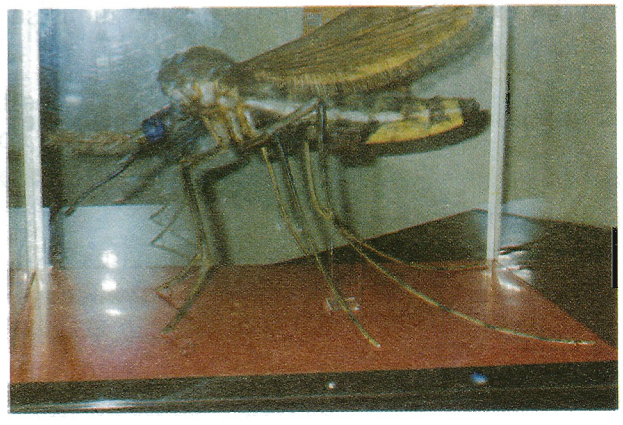

Figure 1: The mosquito vector (*Culex quinquefasciatus*) responsible for transmission of filariasis.

When an infected mosquito bites a human being the infective larvae enter the lymphatic system of man and develop into adult worms during a period of 9-12 months. The life span of an adult worm is about 5-6 years. During this life span a female worm produces millions of microfilariae, which find their way into the peripheral circulation at night.

Microfilariae live for a period of about twelve months in the human host during which period they either die or enter the vector mosquito while taking a blood-meal. Development takes place in the new host for a period of two weeks and the infective larvae thus produced enter the human host during a subsequent bite and cause infection.

Symptoms seen in filariasis vary from person to person eg. feverishness, temporary swellings, cough, red patches, enlarged lymph nodes, aches and pains, joint swelling, itching swelling of hands and feet, painful red streaks in hands and legs passage of milky-white urine, swelling of breasts and testicles etc. Elephantoid swelling develop when the disease progresses and the damage becomes irreversible.

Figure 2: Elephantoid swelling of a leg caused due to filariasis

Figure 3: A Swollen hand developed due to long standing filariasis.

To detect microfilariae blood must be taken at night. Even though it is not practicable best time to take blood is between 10 p.m. and 2 a.m. Florescent antibody test, though very popular is not a reliable test for diagnosing filariasis.

People with microfilariasis are treated by giving the drug Diethyl Carbamazine Citrate (DEC) for two weeks and followed up for two years until they are free of infection. While on drug, some patients develop adverse reactions like fever, headache, and transient swellings in the body, itching, constipation or diarrhoea. These last for 1-2 days and therefore drugs must be continued without interruption. These reactions are more common in people with high microfilaraemia.

Today, filariasis is prevalent in densely populated urban areas due to rapid, unplanned urbanisation that has taken place in these areas producing several manmade mosquito breeding places. The vector breeds in highly polluted stagnant water containing decaying organic matter, which is found rampantly in these areas. Therefore, getting rid of temporary breeding sites, and treating the permanent breeding places with larvicides, using mosquito nets and repellents to minimise man vector contact are some of the methods used today to control disease by vector control.

In the control of filariasis more attention is paid to parasite control and is done by screening the entire population in the endemic area by subjecting them to an annual night blood examination during home visits. The positives detected are treated with DEC and are followed up for 2 years. Within limited resources this coverage is not very satisfactory. Vector control using larvicides is limited to few urban council areas. High cost of larvicides, its temporary effect and the long term hazards caused by environmental pollution has to be considered in using them for vector control.

Today more than 120 million people in the world are affected by lymphatic filariasis in at least 80 countries of whom about 79 million are asymptomatic carriers. A large percentage of the affected people live in South-East Asia. Globally, the infection has been recognised as the second leading cause of permanent and long-term disability with deforming, mutilating disease of the limbs and genitals resulting not only in physical crippling but also in serious psycho-social crippling in economic less. Recent dramatic advances in treatment methods, both for controlling transmission and for disease management, along with improved techniques in diagnosis of the disease, has led an independent International Task Force for Disease Eradication to identify lymphatic filariasis as one of only six infectious diseases that are considered to be eradicable. Therefore, in 1997 World Health Assembly adopted a resolution to eliminate lymphatic filariasis as a global public health problem.

Based on this resolution on the recommendation of the WHO, instead of giving selective treatment after screening, single dose mass drug administration will be carried out in the entire endemic area annually for a period of 5-6 years. Here a combination of two drugs (DEC and Albendazole) will be used to achieve better targets instead of using DEC alone. Albendazole has an antihelmenthic effect in addition to being macrofilaricidal and therefore benefits achieved in administering multi-drug therapy has been considered for the future.

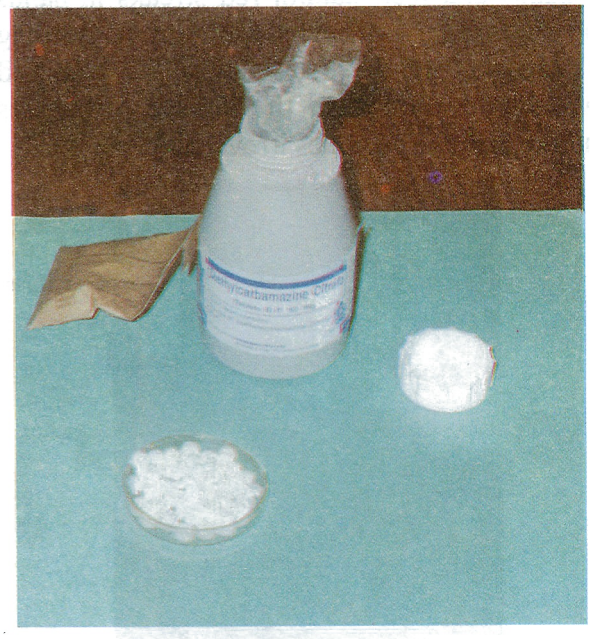

Figure 4: Medicine used in controlling filariasis

Single dose mass treatment using DEC only, commenced in our country in 1997. A population of 0.7 million were thus treated in 1998. This programme was extended to more endemic areas and in October 1999 and in April 2000, this was implemented as a National Programme. Action is being taken to commence implementing the programme using the multi drug regimen in March 2001. Here drugs will be administered to the entire population at risk (above 2 years of age, leaving pregnant and lactating mothers). To get the desired effect coverage of more than 80% will have to be achieved.

Lymphatic filariasis is an eradicable disease. This could be achieved by eliminating the worm-load in the community and by controlling the vector.

This single dose treatment will not be adequate to people harbouring microfilariae and for those with clinical manifestations. These patients must receive the full course of treatment and those with progressive clinical symptoms must be relieved by preventing further progress of the disease, by advising them to attend to proper foot hygiene.

Thus to reach our goal of eliminating lymphatic filariasis as a public health problem, community support and participation is a grave necessity and if these are received fully this dreadful disease could be eradicated from Sri Lanka during the next decade.