

Epidemiology Unit Ministry of Health and Mass Media 231, De Saram Place, Colombo 10 Tel: (011) 2695112, 4740490 Fax: (011) 2696583 e-mail: epidunit@stnetlk Last update May 2025

# Leishmaniasis Fact Sheet

# Leishmaniasis

Leishmaniasis is a vector-borne disease caused by an obligate intracellular protozoan of the genus Leishmania. It is transmitted by the bite of a sandfly. Human Leishmaniasis infection can manifest in three main forms: Visceral Leishmaniasis (VL), also known as Kala-azar, Muco -Cutaneous Leishmaniasis (MCL) also known as Espundia and Cutaneous Leishmaniasis (CL).

# **The Infectious Agent**

Leishmaniasis is caused by protozoan parasites of the genus Leishmania, with over 20 different species known to infect humans. These parasites are transmitted by the bite of infected female phlebotomine sandflies, with more than 90 sandfly species identified as potential vectors. In Sri Lanka, cutaneous leishmaniasis was first diagnosed in patients presenting with skin lesions on exposed areas of the body, often associated with outdoor activities in shrub jungle environments. The Leishmania parasites were initially identified by smear and biopsy microscopy, and in 2002, five isolates cultured from patients were confirmed as Leishmania donovani, a species typically associated with visceral leishmaniasis. However, in parts of Asia and East Africa, L. donovani has also been implicated in cutaneous forms of the disease. In Sri Lanka, clustering of leishmaniasis cases has been observed mainly in the Hambantota and Polonnaruwa districts, with the majority being cutaneous leishmaniasis. The first case of visceral leishmaniasis in Sri Lanka was reported from Anuradhapura in 2006.

## Reservoir

The reservoirs of the disease vary depending on the region and form of leishmaniasis. In many parts of the world, animals such as dogs, rodents, and wild mammals serve as reservoirs. However, in Sri Lanka, where cutaneous leishmaniasis is the predominant form and is caused by a strain of Leishmania donovani, current evidence suggests that humans are the primary reservoir, indicating an anthroponotic transmission cycle.

## Vector

Leishmaniasis is a vector-borne disease transmitted by the bite of infected female sandflies. The only proven vectors of human disease are sandflies belonging to the genus Phlebotomus in the Old World and Lutzomyia in the New World. In Sri Lanka, two species of phlebotomine sandflies have been reported: Phlebotomus argentipes and Phlebotomus stantoni. Of these, P. argentipes is the most significant, as it feeds on humans

and is the known vector of Leishmania donovani, the parasite responsible for visceral leishmaniasis; the most severe and potentially fatal form of the disease. P. stantoni, on the other hand, is a jungle species that feeds mainly on wild rodents. Sandflies are tiny (2–3 mm), silent fliers that rest in dark, humid areas and are most active during the evening and nighttime. Their presence and distribution are closely linked to local climate and environmental conditions, which also influence the risk of disease transmission.

#### Pathophysiology

In Cutaneous Leishmaniasis, on biting their hosts infected female sandfly regurgitate the flagellar leishmania promastigotes into the skin which invade or are phagocytosed by host cells primarily macrophages causing the typical skin lesion. In Visceral Leishmaniasis, protozoa disseminate from the dermis through the lymphatic and vascular systems, leading to infection of other monocytes and macrophages. Infiltration of bone marrow, lymph nodes, liver, and spleen results. Certain strains can disseminate from the skin to cause mucosal lesions (Muco-Cutaneous Leishmaniasis) even years after the primary cutaneous lesions have healed.

#### Mode of transmission

From the reservoir host, through the bite of an infectious female sandfly.

#### **Incubation period**

Cutaneous Leishmaniasis: At least a week to a few months.

Visceral Leishmaniasis: Generally 2-6 months. The range is 10 days to several years.

## Period of communicability

In untreated cases, a person can remain infectious to sandflies for several months to up to two years. The exact period of communicability varies depending on the species of Leishmania, the clinical form, and the person's immune response. In cutaneous leishmaniasis, active skin lesions are the source of infection, while in visceral forms, the parasites circulate in the blood and organs. Early detection and timely treatment are crucial to reduce this period and help prevent further transmission.

#### **Risk factors**

Several factors increase the risk of contracting leishmaniasis. Socioeconomic conditions play a significant role—poverty and poor housing conditions, such as lack of proper waste management and open sewerage, create favourable environments for sandfly breeding. Crowded living spaces and behaviours like sleeping outdoors or on the ground also heighten the risk of sandfly bites. Malnutrition, particularly diets lacking essential nutrients like protein, iron, vitamin A, and zinc, increases the likelihood of the infection progressing to full-blown disease. Population mobility can trigger outbreaks when non-immune people migrate to areas with high transmission rates. Environmental and climate changes also influence the spread of the disease. Deforestation, urbanisation, and climate fluctuations, including temperature changes and rainfall patterns, affect sandfly populations and their geographic spread. Additionally, natural disasters like droughts, famine, and floods can lead to population movements into areas with active transmission, further escalating the risk.

## **Cutaneous Leishmaniasis**

## Incidents / Reported cases in Sri Lanka

In Sri Lanka, CL cases reported in the past were limited to Middle East returnees. In 1992, the first locally transmitted/acquired case was reported in Ambalantota, and the second case was reported in 1995 from Mahiyangana. In 2011, 358 cases were reported from Anuradhapura and 156 cases were reported from Polonnaruwa, and several cases were reported from different parts of the country, mainly in Hambantota district.

#### Clinical

# Presentations

CL is a polymorphic disease of the skin. It is characterised by one or more cutaneous lesions on areas where the sand fly has fed. The disease starts with a macule, then a papule, which enlarges and then becomes an ulcer, with a rare possibility of the lesions remaining non-ulcerative and diffuse. They often end up as skin lesions with a raised edge and a central crater. The local lymph nodes draining the affected area may be enlarged. In Sri Lanka, lesions are usually non-tender, non-itchy papules (early lesions), scaling single nodules or dry crust forming single or multiple ulcers. Lesions may heal spontaneously within weeks to months, or last for a year or more.

#### Diagnosis

Diagnosis is made by combining clinical signs with parasitological or serological tests (such as rapid diagnostic tests). For cutaneous and mucocutaneous leishmaniasis, serological tests have limited value, and diagnosis is primarily confirmed through clinical manifestation along with parasitological tests. Laboratory diagnosis involves microscopic identification of the non-motile, intracellular form of the parasite (amastigote) through stained smears from lesion edges or punch biopsies. The motile, extracellular form (promastigote) can also be cultured on suitable media. For accurate diagnosis, patients should be referred to the nearest dermatology clinic with the necessary expertise and facilities for skin biopsy and parasitological microscopy.

# Treatment

For many cases of Leishmaniasis, decisions on whether treatment is required, the form of treatment and the length of treatment involve careful evaluation of many factors such as types of syndromes, species of the parasite, geographical location of where the patient got infected and potential toxic effects of the drugs.

The following are some of the treatment options available for the treatment of CL.

- Cryotherapy
- Parenteral pentavalent Antimony compounds
- Oral antifungal drugs (Ketoconazole, Itraconazole, etc.)
- Liposomal amphotericine B

Various other drugs and schedules have been used with encouraging results. Whenever treatment options are needed, it is advisable to consult a Dermatologist.

## Visceral Leishmaniasis - Kala-azar

Kala-azar, also known as visceral leishmaniasis, is a chronic, systemic disease caused by Leishmania donovani, Leishmania infantum, or Leishmania chagasi. It is characterised by fever (which can have a gradual or sudden onset, and is often irregular), hepatosplenomegaly (enlargement of the liver and spleen), lymphadenopathy, weight loss, anemia, and leukopenia. If left untreated, the disease is fatal in more than 95% of cases. The condition primarily affects regions such as Brazil, East Africa, and India. Each year, an estimated 50,000 to 90,000 new cases are reported globally, though only 25–45% are officially reported to the WHO. Kala-azar has a significant outbreak and mortality potential, making early diagnosis and treatment crucial.

## **Muco-Cutaneous Leishmaniasis**

Mucocutaneous Leishmaniasis (also known as Espundia) is a severe form of the disease that can develop when cutaneous leishmaniasis is left untreated. In rare cases, the infection spreads from the skin to the mucous and subcutaneous tissues of the nose, mouth, or throat, leading to partial or total destruction of these tissues. This form is most often caused by species found in Central and South America, and may appear years after the original skin sores have healed. Over 90% of cases occur in Brazil, Bolivia, Peru, and Ethiopia. The best way to prevent this disfiguring condition is early diagnosis and proper treatment of the cutaneous form.

#### **Prevention and Control of Leishmaniasis**

Prevention and control of Leishmaniasis is based on avoiding sandfly bites and interrupting the transmission cycle. The following advice is especially useful for the public living in areas known to have local transmission of Cutaneous Leishmaniasis:

A. Prevention of sandfly bites

- Avoid shrub jungles and minimise outdoor activities, especially between dusk and dawn, when sandflies are most active.
- Use bed nets treated with permethrin whenever possible, both during the day and at night. Treated nets remain effective for several months and can significantly reduce exposure.
- Wear protective clothing that covers arms and legs to limit skin exposure.
- Apply WHO-recommended insect repellents to exposed skin areas. Special care must be taken with children and pregnant women when using repellents.
- o Install fine mesh screens on windows and doors to prevent sandflies from entering homes.
- Keep surroundings clean and free of damp organic matter, such as leaf litter and animal waste, which are ideal breeding sites for sandflies.
- B. Suppression of the vectors
  - Insecticide spraying, including residual spraying on walls and potential resting sites of sandflies, can be an effective control measure.
  - Environmental management to eliminate breeding and resting habitats (e.g., cracks in walls, rodent burrows, animal shelters) can reduce sandfly populations.
  - Community-wide vector control campaigns help reduce sandfly density and interrupt transmission more effectively than individual actions.
- C. Suppression of the reservoir
  - In some regions, domestic dogs and wild mammals act as reservoirs for Leishmania parasites. Control
    of animal reservoirs must be tailored to local settings and requires intersectoral collaboration.

- In Sri Lanka, further research is needed to confirm the role of potential animal reservoirs in disease transmission and to guide control strategies accordingly.
- D. Community Awareness and Engagement
  - Educating the public about sandfly behaviour, protective measures, and the importance of early treatment can greatly aid prevention.
  - Community participation is essential for sustaining control activities and ensuring early detection and reporting of cases.

# Notification and investigation

Leishmaniasis is a notifiable disease in Sri Lanka. Reporting of all suspected or confirmed cases of leishmaniasis to the Medical Officer of Health (MOH) is therefore a legal requirement. Once such a case is notified to the MOH, in addition to carrying out a routine investigation and reporting, a special investigation form should also be filled by the MOH staff and sent to the Epidemiology Unit through the Regional Epidemiologist. When a case is reported, the Regional Epidemiologist, with the assistance of the Regional Malaria Officer/Office, could carry out an entomological survey to identify the vector to plan effective control measures.