

- Promote early diagnosis and prompt treatment for persons with skin conditions and exposure history
- Avoidance of outdoor activities, especially from dusk to dawn, when sandflies generally are the most active
- Stocking subcounty hospitals with antileishmanial drugs.
- Initiate programs to reduce stigma and discrimination against those with life-long scars and disability due to leishmaniasis.
- Creation of local surveillance teams to control entry to the caves
- Advocate for setting up national leishmaniasis control programmes
- Adoption of mobilization and education of the community with effective behavioural change interventions

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LEISHMANIA RESERVOIRS AND SANDFLY VECTORS

DANGERS IN CAVES



Neglected Tropical Diseases are chronic infections that are typically endemic in low income countries. They prevent affected adults and children from going to school, working, or fully participating in community life, contributing to stigma and the cycle of poverty.

Dangers in Caves

Bats that harbor parasites for leishmaniasis are found in Mt. Elgon caves. There is need for the government to allocate funds for treatment of this disease and promote awareness for disease control in both Bungoma and Trans Nzoia counties.

What is Leishmaniasis?

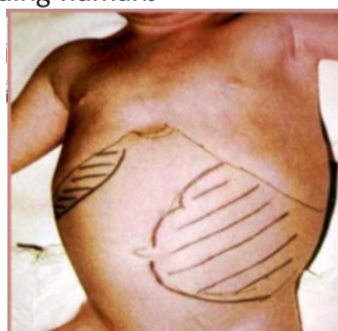
This is a neglected vector-borne disease affecting millions of people worldwide. The disease is caused by different species of Leishmania, and it is manifested by three major clinical forms namely cutaneous, muco-cutaneous and visceral leishmaniasis. Leishmaniasis (see photos). In Kenya, various vectors for leishmaniasis have been identified. Epidemiological cycles of leishmania involve various sandfly vectors and mammalian hosts, including humans



The Kwanza case of *L. aethiopia* infection showing nodules on the face and upper body (arrow)



Kimkung *L. Aethiopia* infection with fresh developing nodules (arrow)



Visceral Leishmaniasis



Mucocutaneous leishmaniasis ulcer

KEY FACTS

- There are 3 main forms of leishmaniasis visceral (also known as kalaazar, which is the most serious form of the disease), cutaneous(the most common), and mucocutaneous.
- Leishmaniasis is caused by the protozoan Leishmania parasites which are transmitted by the bite of infected female phlebotomine sandflies.
- The disease affects some of the poorest people on earth, and is associated with malnutrition, population displacement, poor housing, a weak immune system and lack of financial resources.
- Leishmaniasis is linked to environmental changes such as deforestation, building of dams, irrigation schemes, and urbanization.
- An estimated 700,000 to 1 million new cases occur annually.
- Only a small fraction of those infected by Leishmania parasites will eventually develop the disease
- *Rhinolophus landeri* bats species in Mt. Elgon are reservoir hosts for Leishmaniasis

BACKGROUND INFORMATION

Cutaneous Leishmaniasis occurs in the Highlands of Ethiopia and arid and semi arid regions of Kenya and Uganda, where increased human-fly contact occurs in villages built on rocky hills or river banks, which are the natural habitats of sand flies and hyraxes. Human cases of this disease have been reported in Mt. Elgon region (Mutinga 1975a) although no comprehensive study has been done to reveal its current prevalence, distribution, vector(s) and reservoir(s) status.

Information from the residents of Mt. Elgon reveals that Hyraxes, rats, Porcupines and bats are found in caves. Sand flies have also been found to breed in the caves. It is estimated that the populations of the already implicated Leishmania reservoir hosts in this focus are currently too low due to loss of suitable habitats to maintain continuity of Leishmania transmission. Therefore the current reservoir(s) of the Leishmania species responsible for the maintenance of human cutaneous Leishmaniasis in Mt. Elgon focus are still unknown. Thus, this study investigated the role of bats and other animals found in the proximity of the caves in the maintenance and transmission of the Leishmania parasite in the region.

Effects of environmental changes on emergence of new reservoir hosts

Human imposed environmental changes have led to changes in parasites reservoir host from the rock hyraxes, tree hyraxes and giant rats to bats. Proximity to the caves has also been a predisposing factor to infection through bites of infected sandflies. The new reservoir host in the Mt. Elgon caves is the *Rhinolophus landeri* bats species. There is need for further studies on the hosts' pathogenic features and interaction with sandfly vectors in epidemiological cycles.

Conclusion

Animal reservoirs are important for maintaining the life cycle of many Leishmania species and hence are important for transmission of both zoonotic and rural/sylvatic infections. However, Leishmania reservoirs are so complex that they show regional and temporal variations and only local studies involving ecological and parasitological analysis can determine whether these animals are playing a role as reservoir in a given environment. In Mt. Elgon the blood meal Elisa done on sandflies was positive for bats, hyrax, human, goats and cats. the presence of parasite in both the bats and sandflies points to the possibility of bats maintaining transmission of the leishmania parasites in Mt. Elgon.