CONTROL OF TROPICAL DISEASES

THE LEISHMANIASES

WORLD HEALTH ORGANIZATION

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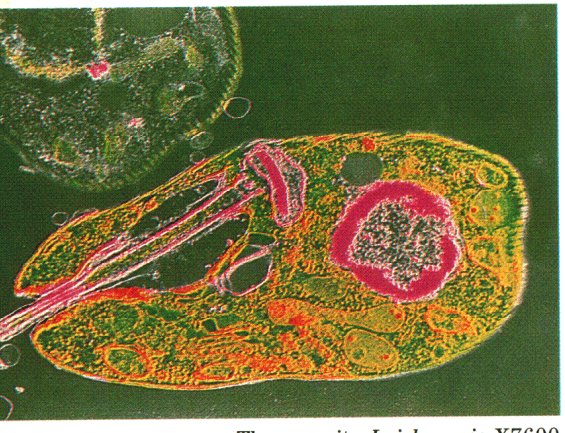

The parasite *Leishmania* X7600

THE LEISHMANIASES

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Cutaneous leishmaniasis.

THE DISEASE

The leishmaniases and the suffering they cause are threatening 350 million men, women and children in 88 countries around the world; 12 million of these people are already affected by the disease which, in its worst form, is fatal.

The leishmaniases are parasitic diseases with a wide range of clinical symptoms: cutaneous, mucocutaneous and visceral.

- **Visceral** leishmaniasis – also known as *kala azar* – is characterized by irregular bouts of fever, substantial weight loss, swelling of the spleen and liver, and anaemia (occasionally serious). If left untreated, the fatality rate can be as high as 100%.
- In *mucocutaneous* forms of leishmaniasis, lesions can lead to partial or total destruction of the mucose membranes of the nose, mouth and throat cavities and surrounding tissues. These disabling and degrading forms of leishmaniasis can result in victims being humiliated and cast out from society.
- *Cutaneous* forms of the disease normally produce skin ulcers on the exposed parts of the body such as the face, arms and legs. The disease can produce a large number of lesions – sometimes up to 200 – causing serious disability and invariably leaving the patient permanently scarred, a stigma which can cause serious social prejudice.

The leishmaniases are caused by different species belonging to the genus *Leishmania* a protozoa transmitted by the bite of a tiny 2 to 3 millimetre-long insect vector, the phlebotomine sandfly. Of the 500 known phlebotomine species, only some 30 of them have been

"Oriental sore" or "Aleppo boil" designates, in Syria, cutaneous leishmaniasis.

positively identified as vectors of the disease. Only the female sandfly transmits the protozoan, infecting itself with the *Leishmania* parasites contained in the blood it sucks from its human or mammalian host in order to obtain the protein necessary to develop its eggs. During a period of 4 to 25 days, the parasite continues its development inside the sandfly where it undergoes major transformation. When the now infectious female sandfly feeds on a fresh source of blood, its painful sting inoculates its new victim with the parasite, and the transmission cycle is completed.

The insect vector of leishmaniasis, the phlebotomine sandfly, is found throughout the world's **inter-tropical and temperate regions.** The female sandfly lays its eggs in the burrows of certain rodents, in the bark of old trees, in ruined buildings, in cracks in house walls, and in household rubbish, as it is in such environments that the larvae will find the organic matter, heat and humidity which are necessary to their development. In its search for blood (usually in the evening and at night), the female sandfly covers a radius of a few metres to several hundreds around its habitat.

For a long time, little was known about the transmission cycles of the disease, but over the last few years, field research and the application of molecular biology have enabled substantial progress to be made in understanding the different links in the transmission chain. Moreover, simple new diagnostic techniques have recently been developed which are practical, reliable and inexpensive. These techniques are available to concerned countries for the early detection and rapid treatment of the disease.

Phlebotomine vector of leishmaniasis, *Phlebotomus ariasi.*

IMPORTANT DATES

Although cutaneous leishmaniasis can be traced back many hundreds of years, one of the first and most important clinical descriptions was made in 1756 by *Alexander Russell* following an examination of a Turkish patient. The disease, then commonly known as "Aleppo boil", was described in terms which are still relevant: *"After it is cicatrised, it leaves an ugly scar, which remains through life, and for many months has a livid colour. When they are not irritated, they seldom give much pain . . . It affects the natives when they are children, and generally appears in the face, though they also have some on their extremities . . . In strangers, it commonly appears some months after their arrival . . . very few escape having them, but they seldom affect the same person above once."*

Representations of skin lesions and facial deformities have been found on pre-Inca pottery from Peru and Ecuador dating back to the first century AD. They are evidence that cutaneous and muco-cutaneous forms of leishmaniasis prevailed in the New World as early as this period.

Texts from the Inca period in the 15th and 16th centuries, and then during the Spanish colonization mention the risk run by seasonal agricultural workers who returned from the Andes with skin ulcers which, in those times, were attributed to **"valley sickness"** or **"Andean sickness".** Later, disfigurements of the nose and mouth became known as **"white leprosy"** because of their strong resemblance to the lesions caused by leprosy.

In the Old World, Indian physicians applied the Sanskrit term *kala azar* (meaning **"black fever"**) to an ancient disease later defined as visceral leishmaniasis. In 1901, *Leishman* identified certain organisms in smears taken from the spleen of a patient who had

"Espundia" shown on a pre-Columbian pottery of Peru.

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"Espundia", mucocutaneous leishmaniasis in Bolivia.

- in the Indian State of Bihar, where 38 out of 42 districts are affected, between 250,000 and 300,000 cases were estimated in 1992 – five times the official figure.

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* In Tunisia, 1300 cases of cutaneous leishmaniasis were reported in 1983. In 1991, the figure had reached 6000. In the Northern States of Brazil, 2000 cases were reported in 1980, and 9000 in 1990.

** including 1.5 million cases of cutaneous leishmaniasis and 0.5 million cases of visceral leishmaniasis.