Updated November 2007

Leishmaniasis

Introduction

Leishmaniasis is an infection caused by a protozoan parasite of the genus *Leishmania, of* which there are more than 20 sub-species. Leishmaniasis is transmitted by the bite of the female sand fly. The organism is found in regions of tropical Africa, Central and South America, the Mediterranean, central and East Asia and southern Europe.

Clinical syndromes in humans are cutaneous and visceral leishmaniasis. Cutaneous leishmaniasis is usually caused by *L. tropica* and *L. major* and by members of the *L. mexicana* complex and the *Viannia* subgenus. Visceral leishmaniasis (also known as Kala-Azar) is usually caused by *L. donovani, L. infantum* and *L. chagasi*.

Epidemiology

Global epidemiology

Leishmaniasis is endemic to more than 80 countries and is an important public health concern with a global incidence of 1.5 – 2 million cases each year [1].

More than 90% of the cases of cutaneous leishmaniasis (CL) occur in Afghanistan, Algeria, Brazil, Iran, Pakistan, Peru, Saudi Arabia, and Syria; 90% of visceral leishmaniasis (VL) occurs in Bangladesh, Brazil, India, Nepal, and Sudan [2]. An increase in leishmaniasis has been observed; for example, the annual number of cases of CL reported in Brazil increased from 21,800 in 1998, to 40,000 in 2002 [2]. An important factor in this increase has been population migration. In Manaus, Brazil, urbanisation has resulted in suburbs being built on the edge of the rainforest, placing human populations in close proximity to animal reservoirs of leishmaniasis that include opossums, sloths, and anteaters [1].

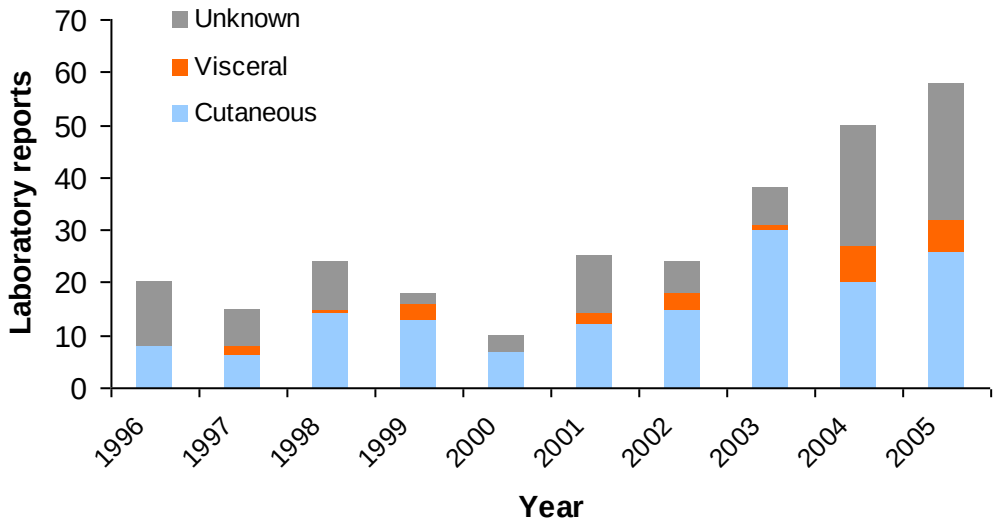
In the poorer suburbs of Middle Eastern countries such as Afghanistan, Iran, Turkey and Syria, population density is high and sanitary conditions are poor, providing ideal breeding grounds for sandflies. As a result there has been a progressive increase in the number of cases of CL reported from Aleppo in Syria. It is estimated that approximately 270,000 persons are currently infected in Kabul, Afghanistan [1].

Leishmaniasis in travellers from England, Wales, and Northern Ireland

In 2004, there were 50 laboratory reports of leishmaniasis, the highest annual number reported since 1990 [3] and an increase of 32% compared to 2003 (38 reports). In 2005, there was a further increase of 16% (58 reports) [4]. Since 1996, the annual number of reported cases, although small, has increased by an average of 28% every year, as illustrated in the figure. In 2004 and 2005, there was also an increase in reports where

the *Leishmania* organism was not identified and, therefore, it is not possible to say whether they were cutaneous or visceral infections.

Figure. Laboratory reports of leishmaniasis by clinical expression, England, Wales, and Northern Ireland: 1996 - 2005



Data from the Health Protection Agency, Centre for Infections

It is presumed that all cases of leishmaniasis reported in the United Kingdom (UK) are acquired abroad, as leishmaniasis does not occur naturally in the UK.

In 2005, of the 26 reports of CL, 21 had travel information; nine stated travel to Central America (seven to Belize, one to Guatemala, and one to Costa Rica and Nicaragua), seven travelled to Afghanistan, four to South America (one each to Bolivia, Colombia, Guatemala, and Guyana), and one to Pakistan. Of the six reports of VL, five had travel information; one each travelled to Afghanistan, the Balkans and Spain, Mediterranean basin, Pakistan, and Turkey. Of the 26 unknown leishmaniasis reports, four had travel information; one each travelled to Afghanistan, India, Belize, and Portugal.

In 2004, there were eight laboratory confirmed cases of cutaneous leishmaniasis in personnel of the British Armed Forces and 50 confirmed in 2005 [4]. Between July 2004 and June 2005, 33 cases in military personnel were laboratory confirmed as *Leishmania major* [5]. Twenty cases had served in northern Afghanistan, 19 were on exercise in Belize and four had returned from Iraq. It is likely that some personnel had served in all three places prior to their diagnosis so it is not possible to say exactly where their infections were acquired. Similarly, between August 2002 and February 2004, 522 confirmed cases of CL were reported in United States' military personnel, the majority of whom had returned from Iraq [6].

Risk for travellers

Adventure travellers, missionaries, and soldiers who travel to areas of risk, particularly to rural or jungle areas are at risk of cutaneous disease [7]. A review of 42 patients with CL at the Hospital for Tropical Diseases in London, found that jungle travel was one of the main factors for transmission [8].

VL is rare in travellers; however imported cases in the UK have occurred following travel to the Mediterranean [9]. The risk of clinical illness with VL is greater in those with HIV infection. Cases of VL and HIV co-infection are well-documented in southern European countries including Spain, Italy, and France [10].

Transmission

Leishmaniasis is a zoonosis in which humans are accidentally infected, although during epidemics, humans may play a part in maintaining the transmission cycle [11]. Mammals, including dogs, foxes, and rodents, are the usual reservoirs for *Leishmania* and the female phlebotomine sand fly is the vector. Sand flies, contrary to what their name suggests, are not found on beaches. They are usually found in forests, the cracks of stone or mud walls, or animal burrows. The sand fly predominantly bites between dusk and dawn and usually stays close to the ground. Approximately 800 species of sand fly have been described, of which 70 belonging to the genus *Phlebotomus* or *Lutzomyia* are known to transmit leishmaniasis [11].

A female sand fly requires a blood meal in order for her eggs to develop and mature. She transmits the promastigote form of the protozoa (carried in the salivary glands) to a human during feeding.

In rare cases, VL has been transmitted congenitally and via blood transfusion.

Signs and symptoms

CL presents as skin lesions that develop weeks or months after infection. They can vary in appearance from a classic round ulcer with a beefy red granulating base and raised margin, to nodules or papular scaling lesions. Regional lymphadenopathy may be present. Untreated, these lesions persist for several weeks. Diagnosis is made by slit skin smear of the lesion, with Giesma staining and microscopy. A specialist parasitology laboratory may also be able to culture and speciate the organism.

Many cases of VL are sub-clinical. Those causing clinical symptoms follow an acute, sub-acute, or chronic course after an incubation period of weeks or months; life-threatening disease may develop with symptoms of fever, hepatosplenomegaly, anaemia, thrombocytopenia, and hypogammaglobulinaemia. Diagnosis is made by detecting *Leishmania* parasites in stained slides or cultures of a biopsy sample or tissue aspirate.

Treatment

Patients should be referred to a specialist tropical disease unit for diagnosis and treatment of all forms of leishmaniasis depending upon the form of the disease. There are several drug treatments available including oral, parenteral, and topical medications. These are chosen based on the form of leishmaniasis and the infecting species and after careful specialist evaluation.

Prevention

There is no vaccine available for leishmaniasis. Travellers should be advised on the need for insect bite avoidance measures, particularly between dusk and dawn.
Sand flies are small enough to pass through a standard mosquito net; however, if the net is impregnated with permethrin it will usually be effective in preventing the flies from going through it.

References

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Further information

Centers for Disease Control and Prevention. Health Information for International Travel 2008. Elsevier Inc. Atlanta. Available online http://wwwn.cdc.gov/travel/yellowBookCh4-Leishmaniasis.aspx

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Links

World Health Organization leishmaniasis website.
http://www.who.int/leishmaniasis/en/

Special Programme for Research and Training in Tropical Diseases
http://www.who.int/tdr/diseases/leish/diseaseinfo.htm