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**WHO Report on Global Surveillance of Epidemic-prone  
Infectious Diseases**

**World Health Organization**

Department of Communicable Disease Surveillance and  
Response

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## CHAPTER 10

### LEISHMANIASIS AND LEISHMANIA/HIV CO-INFECTION

#### Background of the disease

##### *Leishmaniasis*

Leishmaniasis is a parasitic infection transmitted by the bite of an infected female sandfly whose hosts are animals, such as dogs or rodents, or human beings. Leishmaniasis is a highly focal disease with widely scattered foci. The parasite may survive for decades in asymptomatic infected people, who are of great importance for the transmission since they can spread visceral leishmaniasis indirectly through the sandflies. The parasites can also be transmitted directly from person to person through the sharing of infected needles which is often the case with the *Leishmania*/HIV co-infection. The disease has four main forms, depending on the parasite species and the cellular immune system of the patient:

*Cutaneous leishmaniasis* produces skin lesions mainly on the face, arms and legs. Although this form is often self-healing, it can create serious disability and permanent scars. After recovery or successful treatment, cutaneous leishmaniasis induces immunity to re-infection by the species of *Leishmania* that caused the disease.

*Diffuse cutaneous leishmaniasis* is difficult to treat due to disseminated lesions that resemble leprosy and do not heal spontaneously. This form especially is related to a defective immune system and it is often characterized by relapses after treatment.

*Mucocutaneous leishmaniasis*, also called 'espundia' in South America, causes disfiguring lesions to the face; it destroys the mucous membranes of the nose, mouth and throat. Reconstructive surgery of deformities is an important part of therapy.

*Visceral leishmaniasis*, also known as 'kala azar', is characterized by irregular fever, weight loss, swelling of the liver and spleen and anaemia. It is the most severe form of Leishmaniasis, and is usually fatal if left untreated. The incubation period can be months or years and, unlike the cutaneous forms of leishmaniasis, it involves the internal organs. After treatment and recovery, patients may develop chronic cutaneous leishmaniasis that requires long and expensive treatment.

Leishmaniasis has a long history. Designs on pre-Colombian pottery and the existence of thousand-year old skulls with evidence of leishmaniasis prove that the disease has been present in the Americas for a long time. It has also been present in Africa and India since at least the mid-eighteenth century.<sup>4</sup> Today, an estimated 12 million cases of leishmaniasis exist worldwide with an estimated number of 1.5 - 2 million new cases occurring annually; 1 - 1.5 million cases of cutaneous leishmaniasis and 500 000 cases of visceral leishmaniasis.<sup>5</sup>

The geographical distribution of leishmaniasis is restricted to tropical and temperate regions, the living area of the sandfly. The leishmaniasis are considered to be endemic in 88 countries (16 developed countries and 72 developing countries) on four continents. Ninety percent of cases with cutaneous forms of leishmaniasis occur in Afghanistan, Algeria, Brazil, Iran, Peru, Saudi Arabia and Syria, while ninety per cent of visceral leishmaniasis cases are found in Bangladesh, Brazil, India, Nepal and Sudan.

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<sup>4</sup> Allison MJ. Leishmaniasis. In: Kiple KF. ed. *The Cambridge History of Human Disease*, Cambridge, Cambridge University Press, 1993.

<sup>5</sup> Desjeux P. and UNAIDS. *Leishmania and HIV in gridlock*. Geneva, World Health Organization and UNAIDS, 1998, WHO/CTD/LEISH/98.9 and UNAIDS/98.23.

Visceral leishmaniasis can cause large-scale epidemics with high case fatality. For example, Western Upper Nile State in South Sudan experienced a major outbreak of visceral leishmaniasis between 1984 and 1994. This was the first epidemic in this area and therefore people were very susceptible to the disease. Because of an accumulation of risk factors such as civil unrest, disruption of health systems, malnutrition, underlying diseases and due to absence of diagnostic facilities and first line drugs at local level, the mortality rate was very high and 40 000 people were reported to have died due to the disease. Studies indicate that in some villages up to half of the population succumbed to the disease;<sup>6</sup> one study suggests that during this ten-year period visceral leishmaniasis claimed 100 000 lives in a population of around 300 000 in Western Upper Nile State.<sup>7</sup>

There is reason to believe that the number of cases of leishmaniasis is increasing.<sup>8</sup> This is partly due to man-made environmental changes which increase human exposure to the sandfly vector. Extracting timber, mining, building dams, widening areas under cultivation, new irrigation schemes, road construction in primary forests such as the Amazon, widespread migration from rural to urban areas and fast urbanization worldwide are among the main causes for an increased exposure to the sandfly. According to agencies operating clinics in the city of Kabul, Afghanistan, an estimated 270 000 cases of cutaneous leishmaniasis occurred in 1996 among the less than 2 million inhabitants of the city.<sup>9</sup> Kabul is a city where a lot of movement of people from rural to urban areas takes place. Another risk factor is the movement of susceptible populations into endemic areas, including large-scale migration of populations for economic reasons such as the development of agro-industrial projects.

### ***Interaction between surveillance and response***

Early case detection and treatment are the most important control measures for leishmaniasis. In anthroponotic leishmaniasis in which humans are the only reservoir, early detection and treatment reduces morbidity and mortality. Treatment reduces or eliminates parasite loads, and this in turn reduces transmission. Thus surveillance and control are directly linked. The main limitations to treatment are high cost and the relatively long treatment period. In severe situations such as epidemics and highly endemic areas vector control is also used. It consists of house spraying or the use of insecticide-impregnated bed nets.

For zoonotic visceral leishmaniasis, which is usually fatal if left untreated, priority is also given to the detection and treatment of human cases. Other control measures include large-scale screening and testing of dogs, the main reservoir, spraying of houses and animal shelters, and individual protection. Environmental management measures such as destroying breeding and resting sites of the vector have been recommended for zoonotic cutaneous leishmaniasis control.

With the use of insecticide-impregnated bed nets and new tests for serological diagnosis, progress has been made in the prevention and control of leishmaniasis infection. However, better methods are still needed such as more affordable drugs with shorter treatment periods.

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<sup>6</sup> *Joint appeal, emergency assistance to control visceral leishmaniasis (kala azar) in Sudan, 1993* World Health Organization and UNICEF, 1993, (unpublished report).

<sup>7</sup> Seaman J, Mercer AJ, Sondorp E. The Epidemic of Visceral Leishmaniasis in Western Upper Nile, Southern Sudan: Course and Impact from 1984 to 1994. *International Journal of Epidemiology*, 1996, 25:862–871.

<sup>8</sup> Desjeux P. Leishmaniasis, Public Health Aspects and Control, *Clinics in Dermatology*, 1996, 14:417–424.

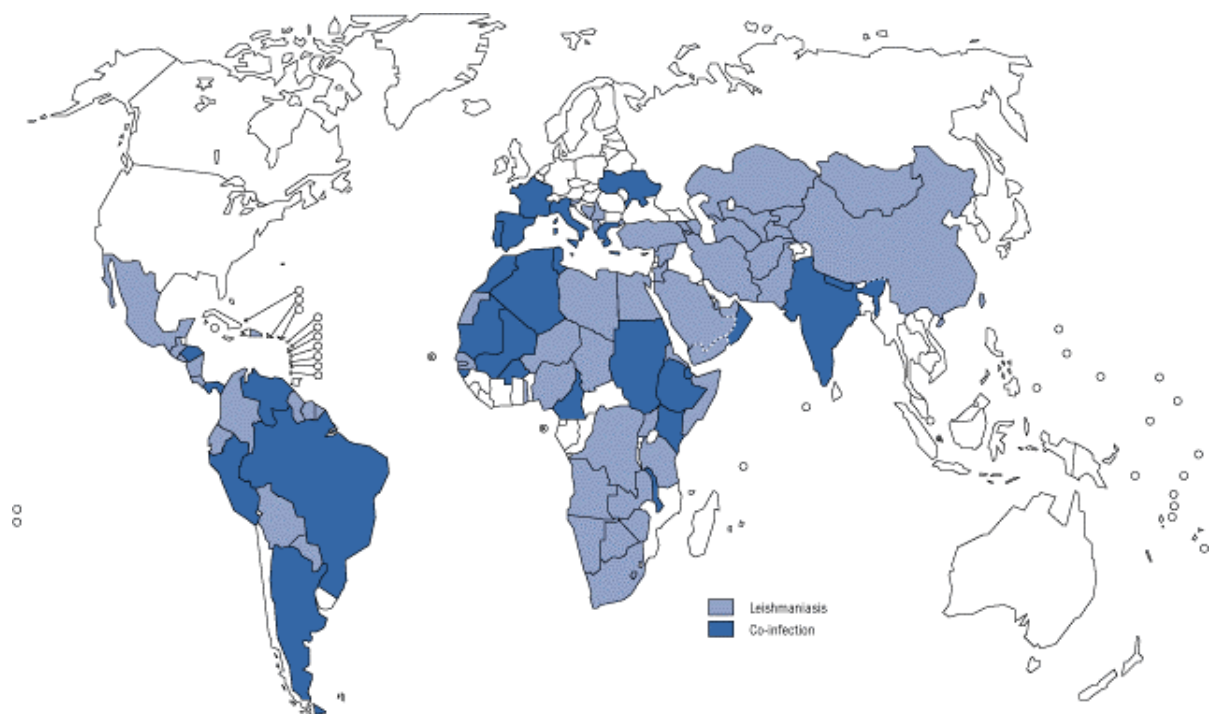
<sup>9</sup> Hewitt S. et al. Anthroponotic cutaneous leishmaniasis in Kabul, Afghanistan: vertical distribution of cases in apartment blocks. *Transaction of the Royal Society of Tropical Medicine and Hygiene*, 1998, 92:273-274.

### ***Leishmania*/HIV co-infection**

Leishmaniasis is one of the opportunistic infections that attack HIV-infected individuals, most of the co-infection involves the visceral form of leishmaniasis.<sup>10</sup> Recently more notice has been taken of *Leishmania*/HIV co-infection.

Map 10.1 shows the global distribution of reported cases of *Leishmania*/HIV co-infection and the distribution of leishmaniasis cases. Up to 1999, 31 countries have reported *Leishmania*/HIV co-infection. There is concern that *Leishmania*/HIV co-infection may increase the transmission of leishmaniasis, particularly the visceral form. The overlap in the geographical areas with high risk of both HIV and leishmaniasis is increasing, with the spread of leishmaniasis (typically a rural disease) into urban areas and the increased spread of HIV into rural areas. Leishmaniasis patients are highly susceptible to HIV infection and in HIV- infected patients, leishmaniasis accelerates the onset of AIDS by cumulative immuno-suppression and by stimulation of the replication of the virus. It also may change asymptomatic *Leishmania* infections into symptomatic ones. In addition, since visceral leishmaniasis can be spread intravenously, sharing of needles by intravenous drug users is a direct way of spreading leishmaniasis.

**Map 10.1 Global distribution of reported cases of leishmaniasis and *Leishmania*/HIV co-infection, 1990–1998**



<sup>10</sup> Desjeux P. and UNAIDS. *Leishmania and HIV in gridlock*, World Health Organization and UNAIDS, 1998, WHO/CTD/LEISH/98.9 and UNAIDS/98.23.

## Description of the global surveillance system and data

In 1994 a surveillance network with 13 institutions was set up to monitor *Leishmania*/HIV co-infection. The main objective is to improve case management (detection and treatment) and to coordinate preventive measures. Today the surveillance network includes 28 institutions in 13 countries. Most institutions are situated in Europe.

The institutions follow standard guidelines and use standard case report forms in order to ensure a common approach. The individual case reports provide detailed information on age, sex, geographical location, travel to endemic countries and details on the HIV and leishmaniasis infection. The institutions report annually to WHO.

## Strengths and weaknesses of the data

Surveillance is limited to the *Leishmania*/HIV co-infection; no regular global surveillance exists on leishmaniasis itself, even though leishmaniasis is notifiable in 33 out of the 88 countries where it occurs.

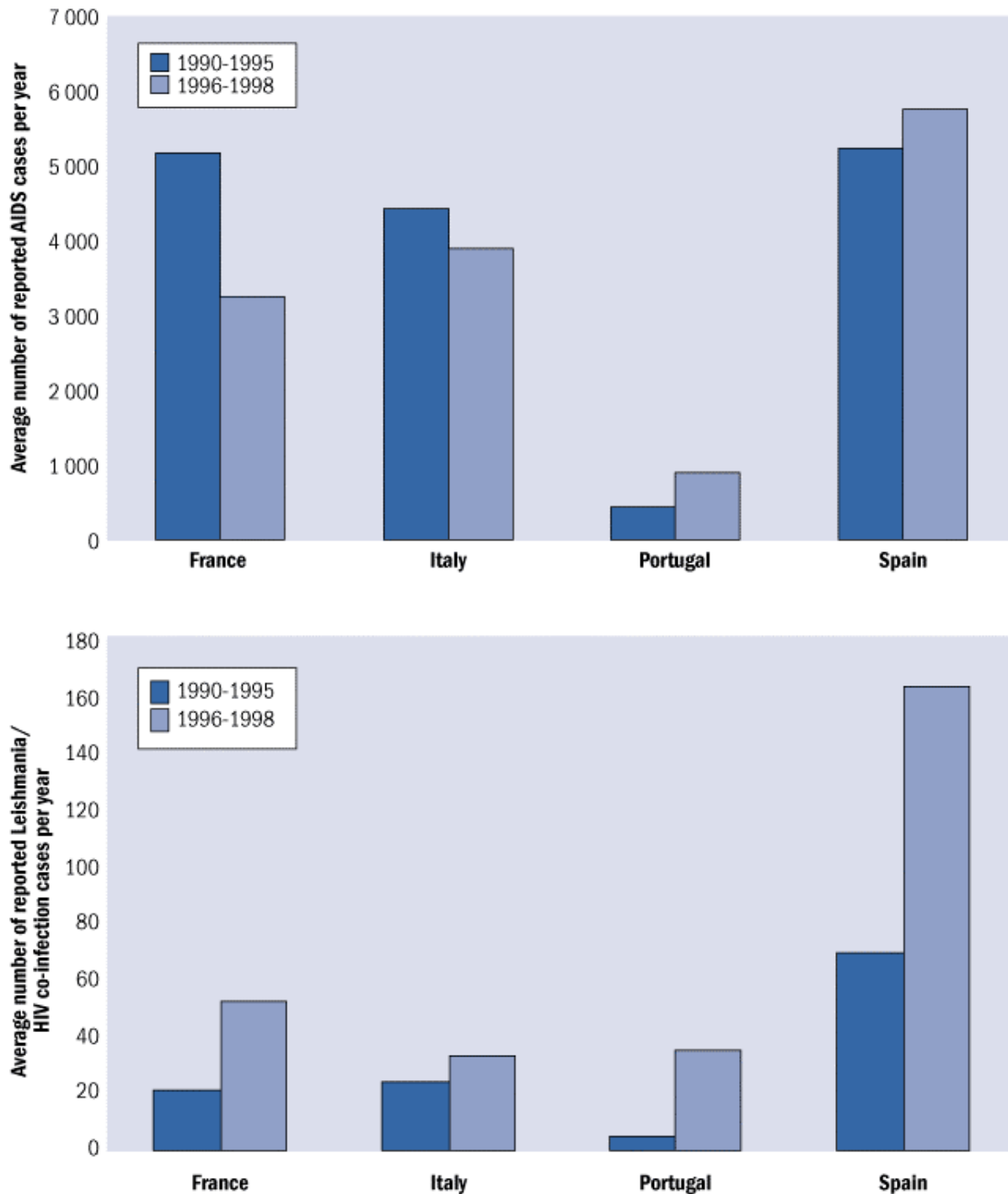
The surveillance system of *Leishmania*/HIV co-infection is just beginning and coverage of areas that are at risk is still incomplete. At present, most of the surveillance is carried out in Europe, although the problem of co-infection is widespread. Out of the 28 surveillance institutions, 17 are located in south-western Europe. In addition, the fact that visceral leishmaniasis is not recognized as an official opportunistic infection means that it is often not reported in HIV/AIDS notification systems. Furthermore, because the immune system of HIV patients is impaired and due to the presence of other opportunistic diseases, leishmaniasis is difficult to diagnose in HIV patients.

## Trends

### *Leishmania*/HIV co-infection in south-western Europe

- Since 1990, cases of co-infection have been reported from 31 countries worldwide (Map 10.1). Most cases have been reported in south-western Europe; where the surveillance system was first implemented and where most of the surveillance centres are located.
- While the total number of cases reported from this area in the period 1990 until June 1998 was 1440, almost 50% have been reported in the last two-and-a-half years (717 cases between 1996 – June 1998). This may represent better reporting as awareness builds up in the area, rather than an increasing trend in infection. However, if the trend continues to rise, it may be advisable to formulate preventive measures, such as the use of bed nets in south-western Europe by HIV positive campers.
- On average, all four countries reported more cases of *Leishmania*/HIV co-infection per year during the last two-and-a-half years, as compared to the period 1990-1995. In Portugal the number of cases reported to WHO between 1996 and June 1998 has gone up seven-fold as compared to the six-year period before (Fig. 10.1).
- On average the number of cases of *Leishmania*/HIV co-infection reported during the last two-and-a-half years has increased relative to the number of reported AIDS cases in the same period (Fig. 10.1).

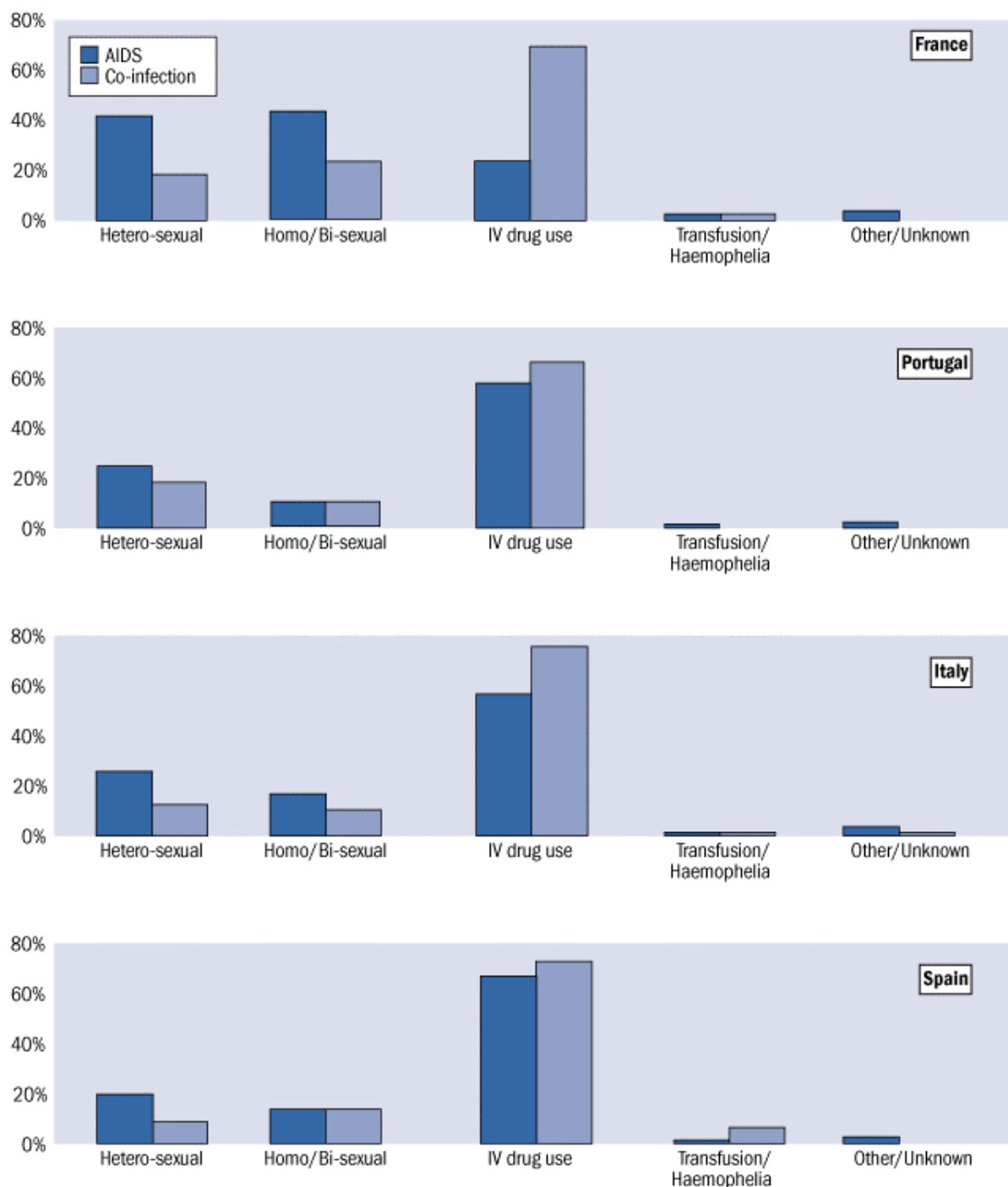
Fig. 10.1 Average number of AIDS cases and *Leishmania*/HIV co-infection cases per year, reported to WHO, south-western Europe, 1990- June 1998



- In south-western Europe *Leishmania*/HIV co-infection is highest in adult males. Over 55% of the cases in this area have been reported to occur in the age group from 31 to 40 years. Over 83% of the reported cases are male.<sup>11</sup>
- Over 70% of the cases of *Leishmania*/HIV co-infection reported from south-western Europe is among intravenous drug users (Fig. 10.2).

<sup>11</sup>Leishmania/HIV co-infection, south-western Europe, 1990–1998, *Weekly Epidemiological Record*, 1999, 74,(44): 365-376.

**Fig. 10.2 Percentage distribution of reported cases of *Leishmania*/HIV co-infection\* and AIDS\*\*, according to probable mode of HIV transmission, south-western Europe, 1997-1999**



\* Mode of probable transmission for *Leishmania*/HIV co-infection is based on the HIV transmission for 1990-1998.

\*\*Mode of probable transmission for AIDS is based on 1998.

- A comparison between probable mode of transmission for *Leishmania*/ HIV co-infection and AIDS, indicates that in all four countries a higher proportion of reported co-infection cases was transmitted by intravenous drug use than HIV infections, as reflected in AIDS cases (Fig. 10.2). This finding was statistically significant for all countries, except for Portugal. This is consistent with the fact that *Leishmania*/HIV co-infection can be transmitted by the use of contaminated needles.
- In Spain, 6% of the cases of co-infection has as probable mode of transmission the transfusion of blood or blood products as opposed to only 1% in the AIDS cases (Fig. 10.2).

## Conclusions

1. Through the surveillance network, whose member institutions use standard case report forms and guidelines, more reliable information on the impact of the *Leishmania*/HIV co-infection has become available. Case management in terms of diagnosis has improved due to good standardization and coordination between the member institutions.
2. Currently, the geographical focus of the surveillance network for *Leishmania*/HIV co-infection is on south-western Europe. The surveillance network should be extended to cover affected areas in Asia, South America, and East Africa.
3. It is feared that the *Leishmania*/HIV co-infection may increase in the near future. The main reason for this is the overlapping geographical distribution of leishmaniasis and HIV due to the spread of HIV into suburban and rural areas and the spread of visceral leishmaniasis into urban areas.

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### Web pages

- WHO Leishmaniasis web pages:  
<http://www.who.int/health-topics/leishmaniasis.htm>

### Videos

- Visceral leishmaniasis: A killing disease (18 mn.).