Leishmaniasis control strategies

A critical evaluation of IDRC-supported research
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Leishmaniasis control strategies
Leishmaniasis control strategies: A critical evaluation of IDRC-supported research

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- prepare reactives and conduct specialized diagnosis tests;
- coordinate statistical and epidemiological analysis and critically review all information gathered by the program;
- guarantee adequate and timely supply of elements for the appropriate operation of the program;
- conduct studies of the affected areas, in respect to parasites, vectors and environment;
- send all information gathered by the program to the National Ministry of Health;
- conduct studies of the affected areas, with the help of minimum levels and regional hospitals.
- develop research projects.

The control measures should be based on long-term epidemiological studies of the foci, improve knowledge of the ecology and increase the effectiveness of research programs.

Leishmaniasis as a Public Health Problem with Emphasis on Latin America
By Rodrigo Zeledon²

Leishmaniasis is a group of important widespread diseases, apparently of ancient origin. They appear to be far more abundant and of greater public health importance than was previously recognized (WHO 1990). Leishmaniasis is not a notifiable disease in many countries and even in those where it is reportable, the actual number of cases is estimated to be three to five times higher than the number reported. The estimated worldwide prevalence of the different clinical forms exceeds 12 million cases, with an incidence of 400,000 new infections per year. The number of persons at risk has been calculated to be 350 million, affecting about 80 countries. Epidemics involving thousands of cases of cutaneous leishmaniasis (CL) have been observed in countries of Africa and serious epidemics of visceral leishmaniasis (VL) have occurred in Asian and African countries, resulting in tens of thousands of deaths (WHO 1991).

New settlements due to population expansion and new developments, such as industrial, agricultural or water resource projects, may bring non-immune persons into endemic areas which result in high numbers of new infections. Even the less aggressive cutaneous forms of the disease can produce serious socio-economic loss in terms of disability of the affected person and costly treatment which sometimes produces undesirable collateral consequences.

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In certain forest areas of South America, some development projects have faced serious obstacles due to fear of the workers of contracting mucocutaneous leishmaniasis and suffering its mutilating effects.

Recent discoveries particularly in Latin America, are demonstrating the great complexity of this group of diseases. Cases emerge in both known and new foci involving diverse ecological situations and including a great variety of parasite isolates, animal reservoirs and vectors. Clinical forms previously attributable to a single group of parasites, are now known to be produced by others which were previously associated with a different type of disease and vice-versa. Immunological impairment of different degrees, in which a given parasite plays a role, is becoming more evident, with different types of clinical pictures and resistance to treatment.

As an example of the above situation in the Americas, new foci are emerging in countries such as the United States (Texas) and the Dominican Republic. In the latter, 33 cases have been observed (H. Bogaert-Diaz, personal communication) of a very peculiar clinical form, produced by a new species of parasite. This new form of the disease was discovered only within the last 20 years and has some distinctive characteristics. The lesions are mainly nodules and/or plaques or hypochromic patches with no tendency to ulcerate; they are often disseminated, but some patients had only two or three lesions and seven had only one. The lesions are very rich in parasites and the Montenegro skin test is negative in most of the cases, indicating some sort of immunological impairment. At least two cases have cured spontaneously and others have responded to the intraleosional injection of neglumine antimoniate. This disease is probably also present in neighbouring Haiti where the suspected vector is present and conditions are similar to those of the Dominican Republic. In another Caribbean island, Trinidad, an enzootic cycle exists which at any time could become a true zoonosis involving man (Zeledon 1992).

Other situations that deserve special mention in the Latin American picture, are the findings of a type of cutaneous leishmaniasis produced by *L. infantum* in Costa Rica and Honduras and the identification of *L. amazonensis* as an agent for visceral leishmaniasis in Brazil.

In the first case, a nodular non-ulcerative form of CL sometimes presenting only papules or erythematous plaques has been reported, produced by a strain of *L. infantum* identical to zymodeme MON-1 of the Mediterranean area (Zeledon 1989; Ponce et al. 1991; Zeledon 1991). Some clinical forms are similar to the Dominican Republic cases, but parasites are scarce in the lesions and the anergic reaction to Montenegro test is not present in the Central American cases. Whereas in the Honduran situation, visceral cases occur concomitantly with the cutaneous cases, in Costa Rica only the latter form is observed. This difference may be explained by better sanitary conditions, with a lower child mortality rate and a lower malnutrition index in Costa Rica as compared to Honduras. A prospective study undertaken in Bahia, Brazil (Bardaro et al. 1986; Cerf
1987), suggested that both malnutrition and concomitant infectious diseases, acquired at an early age, are important risk factors in the acquisition of the classical picture of visceral leishmaniasis. Of 1,494 children with normal nutritional status, 12 had visceral leishmaniasis (8.03 cases/1,000). However, of 144 children with a moderate to severe degree of malnutrition, 10 had the disease (69.44 cases/1,000). This means that a child with moderate to severe malnutrition has 8.7 times more risk of developing visceral leishmaniasis. In the same area it was observed that a two year old child has a 1:10 chance of being infected and 1:4 chance of developing the disease, but if the child is malnourished the probability is 1:2. On the other hand, a seven year old child has a 1:6 chance of being infected but only a 1:36 chance of developing the disease.

In relation to the Brazilian situation it has been observed that *L. amazonensis* can produce a wide spectrum of clinical forms that include cutaneous (20/49 cases), mucocutaneous (5/13 cases) and visceral (11/45 cases), as well as four cases of post kala-azar dermal leishmaniasis and one diffuse cutaneous leishmaniasis (Barra et al. 1991). The authors of these data have pointed out the need to re-evaluate the relationship of different species of *Leishmania* and the clinical picture they produce in humans.

These are just a few examples showing the complexity of the new trends of leishmaniasis in the New World. Finally, I would like to analyze, in a general way, the current situation of cutaneous leishmaniasis in a Central American country such as Costa Rica and how this country is addressing it.

The good sanitary conditions prevailing in Costa Rica have made possible an increase in the importance of leishmaniasis among parasitic diseases. The annual estimated incidence is 4,000-5,000 cases in a population of three million, making it the sixth most frequent of all notifiable infectious diseases. CL is widespread in rural areas; it is also associated with primary forest in less populated areas. The incidence tends to be higher during the rainy season. The most affected age group is under 10 years of age and it is common in children under two years. From 1982 to 1986 the mean annual incidence rate per 100,000 for the entire country varied from 55.2 to 116.8 and the highest rates were observed for the province of Limon, on the Atlantic coast, reaching 1,560.7 in 1985 and 1,355.0 in 1986. (Hidalgo et al. 1987).

Costa Rica has a good primary care health program with an important involvement of the community. CL is well integrated so that identification of cases is immediate and treatment mainly by intralesional injections of meglumine antimoniate is offered free of charge. This modality of treatment has proved to be very effective against *L. panamensis*, the agent responsible for practically all cases in the country, and its cost is lowered by a factor of 20. Awareness about the disease among the population also allows early detection of cases with mucosal involvement which, in any event, represents only 3-5% of the cases produced by the same parasite in Costa Rica.
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REFERENCES


