

## LEISHMANIA INFANTUM, THE AETIOLOGICAL AGENT OF AMERICAN VISCERAL LEISHMANIASIS (AVL)?

HOOHAN MOMEN\*, GABRIEL GRIMALDI JR.\*\* & LEONIDAS M. DEANE\*\*\*

Instituto Oswaldo Cruz \* Departamento de Bioquímica e Biologia Molecular \*\* Departamento de Imunologia \*\*\* Departamento de Entomologia, Caixa Postal 926, 20001 Rio de Janeiro, RJ, Brasil

The identity of the causative agent of AVL has been the cause of some controversy reviewed by Lainson (1983, *Trans. R. Soc. Trop. Med. Hyg.*, 77 :569-596) and Deane & Grimaldi (1985, in *Leishmaniasis*, ed. Chang K.-P. & Bray R.S. Elsevier, Amsterdam., pp. 247-282). On the one hand the parasite is thought to be indigenous to the New World and is considered as a distinct species *L. chagasi* or separate subspecies *L. donovani chagasi*. On the other hand some authors consider that the parasite has been introduced into America in recent times by European colonists, African slaves or accompanying dogs and that the parasite should be classified as *L. (d.) infantum*, the aetiological agent of visceral leishmaniasis in the Mediterranean Basin. A third view, is that more than one parasite may be involved.

Long ago workers in Brazil, based on experimental data or epidemiological considerations, regarded *L. chagasi* as identical to or possibly a synonym of *L. infantum* (Cunha, 1938, *Brasil Med.*, 52 :849-855 and *Mem. Inst. Oswaldo Cruz*, 33 :581-616; Guimarães, 1945, 1ª Reun. Anual dos Dermato-sifilografos Brasileiros, Rio de Janeiro, 26-28/9/1944 :89-93). Recently a number of studies have confirmed these earlier observations by showing that a) *L. d. chagasi* from different endemic areas in the New World isolated from human cases, vectors, domestic and sylvatic animals are practically indistinguishable and b) that strains of *L. d. chagasi* are very similar to the reference strain of *L. d. infantum*. Some of these studies are given below.

Desjeux et al. (1984, *Inst. Bol. Biol. Altura*, Anuario :163-170) found that Bolivian isolates of *L. d. chagasi* from a human case, a dog and 5 specimens of *Lu. longipalpis* were identical in

13 out of 13 enzymes to the type strain of *L. d. chagasi* from Brazil and a strain of *L. infantum*.

Lainson et al. (1985, *Trans. R. Soc. Trop. Med. Hyg.*, 79 :223-226) reported that strains isolated from man, foxes (*Cerdocyon thous*) and *Lu. longipalpis* in the state of Pará, Brazil were indistinguishable from isolates from man elsewhere in Brazil based on morphology, behaviour in the sandfly, in vitro culture and the hamster and enzyme electrophoresis.

Grimaldi et al. (1987, *Am. J. Trop. Med. Hyg.*, 36 :270-287) using a panel of 16 *L. donovani* species-specific monoclonal antibodies examined 110 isolates of *L. donovani chagasi* from eight states representing the major endemic areas of Brazil, two isolates from Honduras, as well as the WHO recommended reference strains for *L. d. chagasi* and *L. d. infantum*. They did not find any significant difference in the reactivity pattern to the monoclonals.

Kreutzer et al. (1987, *Am. J. Trop. Med. Hyg.*, 36 :22-32) found that twenty isolates of *L. d. chagasi* from Honduras, Panama, Colombia and Brazil including the WHO reference strain were monomorphic in 19 out of the 20 enzyme loci studied and these isolates could not be separated from two isolates of *L. d. infantum*.

We have shown (results to be published elsewhere) that in a study using 11 enzyme loci no differences were detected in over 100 isolates of *L. d. chagasi* from the major endemic areas of AVL in Brazil. The isolates came from both human and animals (dog and opossum) and the strains had the same enzyme profile as the WHO reference strains of *L. d. chagasi* and *L. d. infantum*.

It is already known that *L. d. infantum* can infect and develop in *Lu. longipalpis* (Killick-Kendrick et al. 1980, *Ann. Trop. Med. Parasit.* 74 :563-565). There have also been several reports of the importation of canine visceral leishmaniasis from the Mediterranean Region into the New World including the apparent transmission of the parasite within a dog kennel

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in the U.S.A. (Zeledon, 1985, in *Leishmaniasis*, ed. Chang K.-P. & Bray R.S., Elsevier, Amsterdam, pp. 313-352).

It is therefore proposed that the aetiological agent of American Visceral Leishmaniasis be

designated as *L. infantum* to reflect the identity with the agent of Mediterranean Visceral Leishmaniasis. The subspecific epithet *chagasi* and *infantum* can be reserved for future use should additional evidence indicate a differentiation between the Mediterranean and New World forms.