

Human visceral leishmaniasis in Bolivia: first proven autochthonous case from 'Los Yungas'

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Case Report

On 25th February, 1982, a boy aged two years and two months was brought to the Children's Hospital in La Paz with a six-month history of diarrhoea, vomiting, fever and asthenia.

On 14th April, a tentative diagnosis of kala-azar, based on clinical and biological features, was made. A sample of bone marrow showed a few extracellular amastigote forms, confirming the kala-azar diagnosis. The following day, material from a second bone-marrow puncture was sown in NNN medium made with Difco Blood Agar Base (Code B45). After four days, motile promastigote forms were abundant in the culture supernatant. Isoenzyme studies, now in progress, will complete the characterization. All known characters are consistent with *Leishmania donovani chagasi*.

Using as antigen *L. d. infantum* reference strain (K263-IT-MAP), diagnosis was confirmed by indirect immunofluorescence and immunoelectrophoresis. The immunoglobulin titres, though non-specific (single radial immunodiffusion technique) were typically high (IgG: 3,075 mg%, IgM: 300 mg%). Protein electrophoresis confirmed the results, the albumin to globulin ratio being less than one (Alb.: 22.4%, Glob.: 77.6%).

Treatment with N-methyl-glucamine was started on 15th April and the patient was completely cured after a third course and left the hospital on 19th June.

Discussion

The first autochthonous case of visceral leishmaniasis in the Americas was described by MIGONE (1913) in Paraguay but was possibly acquired in Matto-Grosso State, Brazil. MAZZA & CORNEJO (1926) reported two cases in children from Salta Province and INDA *et al.* (1934) described two more in children from Chaco Province, Argentina. PENNA (1934) reported 41 autochthonous cases from different states of Brazil. Autochthonous cases have since been reported in almost every country of South and Central America (see LAINSON & SHAW, 1979).

Kala-azar has been almost unknown in Bolivia until recently, only three cases having been reported by GATTI *et al.* (1939), MONTEIRO DE BARROS & ROSENFELD (1942) and ARRUDA *et al.* (1949). In the 'Los Yungas' area, both cutaneous and mucocutaneous leishmaniasis are very frequent (VEINTE-MILLAS, 1928; BALCAZAR, 1946; WALTON *et al.*, 1973; DESJEUX, 1974, 1976; DESJEUX *et al.*, 1974; WALTON & CHINEL, 1979). However our patient is the first proven autochthonous case of human visceral leishmaniasis from this area. The child lives in Chimasi, a small village 1650 m above sea level, 155 km E-NE of La Paz, in a rather dry, subtropical

valley of the eastern Andean Cordillera (Department of La Paz), which links the 'Altiplano' (3,900 m) to the tropical Amazonian lowlands. The patient and his family live in an isolated farmhouse in an area where coca, coffee and citrus crops predominate. The patient had never lived elsewhere. No more cases were observed in the village after clinical investigation of 50 children but it is well known that oligo-symptomatic or cryptic infections can occur. Moreover, the young age of the patients (two years two months) is common in kala-azar, as observed by DEANE (1981) in Ceara, where in a sample of 1,230 patients, 60% were in the 0-4 age group.

We are now looking for sandfly vectors and reservoirs in 'Los Yungas' where *Lu. longipalpis* is frequent in peridomestic areas (VELASCO, 1973) and in Chimasi we caught many specimens around the patient's home, especially in a chicken coop located near his bedroom door.

In Brazil, DEANE (1956) showed that the cause of visceral leishmaniasis occurred in dogs and wild foxes (*Lycalopex vetulus*) and LAINSON *et al.* (1969) demonstrated *L. d. chagasi* in the kidney of a fox, *Cerdocoyon thous*, caught in Pará state.

We recently reported the presence of canine visceral leishmaniasis in Bolivia in 'Los Yungas' (ANGLES *et al.*, 1982). Naturally then, in our search for reservoir hosts of visceral leishmaniasis in 'Los Yungas' we are concentrating on examining carnivores.

Acknowledgements

We are grateful to the French Ministry of Foreign Affairs and D.G.R.S.T. (Grant No. PVD/81.L.1423) for their financial support and thank P. D. Ready for his critical review of the manuscript.

References

- Angles, R., Le Pont, F. & Desjeux, P. (1982). Visceral canine leishmaniasis in Bolivia. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, **76**, 704.
- Arruda, W., da Costa, F. C., Nahas, S. & Rosenfeld, G. (1949). Leishmaniose visceral americana. Constatação de dois casos. *Brasil Medico*, **8-9**, 63-65.
- Balcazar, J. M. (1946). *Epidemiologia boliviana*. Buenos Aires: Imprenta Lopez, 250 pp.
- Deane, L. M. (1956). *Leishmaniose visceral no Brasil*. Rio de Janeiro: Serviço de Educação Sanitaria.
- Deane, L. M. (1981). *Report on the epidemiology of the leishmaniasis in Brazil*. WHO Scientific Working Group on Leishmaniasis. Geneva, 22-25 September, 1981.
- Desjeux, P. (1974). *Leishmaniose cutanée et cutanéomusqueuse américaine. Etude de 113 cas observés en Bolivie*. Thèse Doctorat Médecine, Paris, 132 pp.
- Desjeux, P. (1976). Relations leishmaniose et altitude. Formes cliniques, données épidémiologiques. *Colloque INSERM "Anthropologie et biologie des populations andines"*. Toulouse, Editions INSERM, pp. 247-256.

- Desjeux, P., Quilici, M. & Lapiere, J. (1974). A propos de 113 cas de leishmaniose cutanée et cutanéomuqueuse observés en Bolivie. Etude séro-immunologique de 71 cas. *Bulletin de la Société de Pathologie Exotique*, **67**, 387-395.
- Gatti, G., Boggino, J. & Prieto, C. (1939). Un nouveau foyer de leishmaniose viscérale en Amérique du Sud. *Bulletin de la Société de Pathologie Exotique*, **32**, 602-605.
- Inda, F. F., Vivoli, D. & Vaccarezza, A. J. (1934). Estudio anatomoclinico de un caso de kala-azar en el adulto (fiebre negra). Primera observacion en nuestro pais. *Semana medica*, **41**, 413-424.
- Lainson, R., Shaw, J. J. & Lins, Z. C. (1969). Leishmaniasis in Brazil. IV. The fox, *Cerdocyon thous* (L.) as a reservoir of *Leishmania donovani* in Pará State, Brazil. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, **63**, 741-745.
- Lainson, R. & Shaw, J. J. (1979). The role of animals in the epidemiology of South American leishmaniasis. *Biology of the Kinetoplastida*, Vol. 2, W.H.R. Lumsden & D. A. Evans (Editors), pp. 1-115.
- Mazza, S. & Cornejo, A. J. (1926). Primeros casos autóctonos de kala-azar infantil comprobados en el norte de la Republica (Tabacal y Oran, Salta). *Boletin del Instituto de Clinica Quirurgica*, **2**, 140-144.
- Migone, L. E. (1913). Un cas de kala-azar à Asuncion, Paraguay. *Bulletin de la Société de Pathologie Exotique*, **6**, 118-120.
- Monteiro de Barros, O. & Rosenfeld, G. (1942). Leishmaniose visceral americana. Um caso da Bolivia. *Revista clinica da São Paulo*, **4**, 91-99.
- Penna, H. A. (1934). Leishmaniose visceral no Brasil. *Brasil medico*, **48**, 949-950.
- Veintemillas, A. (1928). (Mentioned without reference by Balcazar, 1946).
- Velasco, J. E. (1973). *The phlebotomine sandflies of the Los Yungas region of Bolivia*. M.S. Thesis, Louisiana State University, Dept. of Tropical Medicine & Parasitology, 204 pp.
- Walton, B. C., Chinel, L. V. & Eguia, O. E. (1973). Onset of espondia after many years of occult infection with *Leishmania braziliensis*. *American Journal of Tropical Medicine and Hygiene*, **22**, 696-698.
- Walton, B. C. & Chinel, L. V. (1979). Racial differences in espondia. *Annals of Tropical Medicine and Parasitology*, **73**, 23-29.

Accepted for publication 1st June, 1983.

