

How visceral leishmaniasis spread through central-Southern Brazil

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Dog with visceral leishmaniasis collected at the Teresina Zoonoses Control Center, State of Piauí, Northeast Brazil, where the disease is endemic. Credit: Photo taken by Veterinarian Fernando Oliveira (CC BY 4.0)

The protozoan disease visceral leishmaniasis (VL) has recently expanded to places where it had not previously been reported and has expanded its geographic distribution within countries where it was already endemic. Now, researchers writing in *PLOS Neglected Tropical Diseases* describe three dispersion routes that have moved *Leishmania infantum* into and through central-Southern Brazil, helping shed light on the overall mechanisms of VL dispersal.

Currently, 1.69 billion people are estimated to be living in VL transmission areas worldwide and 90% of VL cases occurred in six countries, including Brazil. Between 1920 and 1980, VL was restricted to [rural areas](#) in Northeast Brazil, however the disease then spread to urban areas in other regions of the country. The dispersal of the protozoan is poorly understood, and in 2012, the parasite was reported in the western region (Foz do Iguaçu) of Paraná state, far from the epidemic regions. Foz do Iguaçu is one of the main touristic destinations in Brazil.

In the new work, Vanete Thomaz-Soccol, of Universidade Federal do Paraná (UFPR), and colleagues genetically analyzed 132 isolates from dogs, humans and sand flies collected in central-Southern Brazil. In addition, historical records of VL cases in central-Southern Brazil were collected by searching publically available literature databases for relevant publications.

The researchers describe three dispersion routes that have likely carried VL into central-Southern Brazil—dispersion from Bolivia via the Bolivia-Brazil gas pipeline from 1998 to 2005, dispersion from Paraguay after 2012, and emergence of a new cluster in western Santa Catarina State in 2013 and its dispersion to southern Paraná State. The routes help highlight risk factors for the dispersion of *L. infantum*, including the lack of joint policies with countries bordering Brazil.

"Understanding how VL has dispersed is vital to the development of control measures for this disease and to avoid future dispersion events," the researchers say. "Our results highlight the need for the development of plans that efficiently avoid the [dispersion](#) of VL in the central-southern Brazil that includes monitoring of this diseases and joint policies with countries bordering this Brazilian region."

More information: Pasquali AKS, Baggio RA, Boeger WA, González-Britez N, Guedes DC, et al. (2019) Dispersion of *Leishmania* (*Leishmania*) *infantum* in central-southern Brazil: Evidence from an integrative approach. *PLOS Neglected Tropical Diseases* 13(8): e0007639. doi.org/10.1371/journal.pntd.0007639

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