

## Geographic spread of visceral leishmaniasis in Brazil

Visceral leishmaniasis (VL) affects 65 countries, with an estimated incidence of 500 thousand new cases and 59 thousand deaths per year. In Brazil, the disease is caused by the protozoan *Leishmania infantum chagasi*, transmitted by sandflies from genus *Lutzomyia*, with dogs as the principal source of infection in urban areas. VL is a serious disease with few treatment options, and even with adequate treatment the case fatality rate is some 5%.

Historically, VL has been considered a rural endemic, but since the 1980s the disease has undergone gradual urbanization. The first major urban epidemic in the country was in Teresina, Piauí State. Epidemics occurred later in Natal (Rio Grande do Norte) and São Luís (Maranhão), and the disease subsequently spread to other regions of the country. Autochthonous cases were recently described for the first time in the southernmost State of Rio Grande do Sul.

The epidemiological panorama leaves no doubt as to the severity of the situation and the unchecked geographic spread of VL. From 1980 to 2008, more than 70 thousand cases of VL were reported in Brazil, with 3,800 deaths. The mean number of cases reported per year increased from 1,601 (1985-1989) to 3,630 (2000-2004), leveling off since then. In the 1990s, only 10% of cases occurred outside the Northeast Region, but in 2007 the proportion reached 50% of cases. From 2006 to 2008, autochthonous transmission of VL was reported in more than 1,200 municipalities (counties) in 21 States.

VL is a neglected disease that affects neglected populations. Poverty, migration, unplanned urban settlement, environmental destruction, precarious sanitation and housing, and malnutrition are some of its numerous determinants. The World Health Organization recognizes the lack of sufficient means for its elimination, despite initiatives on the Indian subcontinent, where the disease is transmitted from person to person by vector bites. In this case, treatment of cases may help decrease transmission. However, in Brazil, where the disease is zoonotic, treatment of human cases plays an essentially curative role.

The National Program for the Control of Visceral Leishmaniasis bases its strategy on the detection and treatment of human cases, control of domestic reservoirs, and vector control. Still, after years of investment, these measures have proven insufficient to prevent spread of the disease. The introduction of VL in Brazilian cities represents a different epidemiological reality from the historical situation and requires new strategies by VL surveillance and control systems.

Visceral leishmaniasis raises many challenges, but the emphasis should be on scientific and technological development and health innovation. More research is needed for the development of new drugs, treatment regimens, and clinical management protocols. Studies on the effectiveness of control measures should be backed by solid methodologies; it is necessary to invest in integrated tactics for structured intervention according to the different transmission scenarios, preferably targeting the areas at highest risk. The production and validation of new diagnostic tests should be highlighted. Studies for effective vaccines to protect individuals and decrease transmission should be prioritized. Research should also be encouraged to solve operational barriers to the implementation of preventive measures.

There is still a huge lack of knowledge on VL. However, besides scientific production itself, a broad social commitment is needed to prevent VL from taking a definitive foothold as one more serious health problem in Brazil's daily urban reality.

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