

The control of visceral leishmaniasis in Brazil: end of a cycle?

Visceral leishmaniasis (VL) is a vector-borne disease with widespread distribution in the world, although 90% of the cases occur in only six countries: India, Bangladesh, Sudan, South Sudan, Brazil, and Ethiopia. There are an estimated 200,000 to 400,000 new cases a year in the world, 10% of which evolve to death, particularly affecting populations living in situations of poverty and social vulnerability.

The transmission cycle in Brazil is zoonotic, with the domestic dog as the principal reservoir and the sand fly *Lutzomyia longipalpis* as the most epidemiologically important vector. Since the early 20th century, when VL was identified in Brazil and the transmission cycle was elucidated, control of the disease has challenged researchers and health professionals.

Initially described as a rural endemic, since the 1980s the disease has undergone a process of urbanization and territorial expansion. From 2010 to 2014, approximately 17 thousand new cases of VL were reported with more than 1,100 deaths, and autochthonous cases in one-fourth of Brazil's municipalities (counties) and 21 states. Currently, more than 70% of cases occur in 200 municipalities, one-fourth of which with more than 100,000 inhabitants, including Aracaju (Sergipe), Araguaína (Tocantins), Baurú (São Paulo), Belo Horizonte (Minas Gerais), Campo Grande (Mato Grosso do Sul), Fortaleza (Ceará), Montes Claros (Minas Gerais), São Luís (Maranhão), and Teresina (Piauí).

The Visceral Leishmaniasis Control Program (PVCLV) of the Brazilian Ministry of Health establishes measures to reduce VL transmission, morbidity, and mortality. Recommendations for decreasing the force of transmission include vector control and canine serological surveys with subsequent culling of infected dogs. Actions to reduce human case-fatality involve the improvement of procedures for early diagnosis and ready availability of drugs for treatment. Despite the efforts and resources committed for the full functioning of the PVCLV, there is a growing perception in the scientific community that the measures to reduce transmission have not produced the desired effect. VL and dengue are the principal failures in the control of transmissible diseases in Brazil ¹.

The article by von Zuben & Donalísio published in this issue of CSP provides new empirical elements that can help explain the ineffectiveness of current control measures for reducing VL incidence and limiting the geographic dissemination of the disease. Contrary to studies that have demonstrated the insufficient results of culling infected dogs and vector control, the article addresses the operational difficulties in achieving the PVCLV's goals. The authors explore the process of implementation of the proposed measures themselves as the defining element in their performance.

Based on interviews with administrators of the PVCLV in six large municipalities, the authors reinforce anecdotal and local evidence that structural problems are the crux of the issue. Chronic shortage of inputs and human and financial resources contributes to the control activities' discontinuity and/or low coverage. Meanwhile, dog owners have increasingly resisted allowing access to their residences by PVCLV teams to implement these measures, notably canine euthanasia. The situation is aggravated by other difficulties: low priority of VL compared to other diseases, especially dengue; relative inaccuracy of diagnostic tests for detecting canine infection; growing legal interference in response to action by nongovernmental organizations and veterinarians against canine euthanasia; low impact of health education activities based on a logic by which the people are seen as passive rather than protagonists in the process; and chronic problems with environmental sanitation. In short, even if the recommended measures were highly efficacious (which has not

been thoroughly proven), all the problems detected would still be sufficient to create an intervention program incapable of fully achieving its objectives.

Changes are needed, and some have been made. From the emphasis on reducing transmission, the PVCLV has turned its sights on reducing case-fatality as the priority. The priority target should be to avert the 250 deaths per year from VL, due to this outcome's relevance and the greater feasibility of achieving it when compared to a substantial reduction in incidence. The objective of reducing the risk of infection has not been abandoned, and has even been improved, based on a logic in which the surveillance and control strategies are implemented according to transmission levels (despite criticism of the methods used to estimate these levels).

Are these changes sufficient? Although they are welcome, the answer is a resounding NO! The pillars of the current PVCLV are the same ones established by *Executive Order 51,838* of March 14, 1963, more than 50 years ago. In the 1960s, VL was typically a rural endemic, concentrated in the Northeast of the country, where nearly two-thirds of the population lived in rural areas, the illiteracy rate was 60%, life expectancy 45 years, and less than one-third of the households had access to running water (a completely different scenario from the present).

In large cities, the operational difficulties become more complex in a program that needs to combine agility and high coverage. Not only the challenge is huge, but the barriers to action by the PVCLV teams increase due to the complexity of the urban fabric and the violence that limits access to specific territories or of the less passive reaction by the population in accepting interventions such as sacrificing dogs. The current strategies are clearly anachronistic, so that limited modifications are merely palliative.

Changes are needed, but they need to be comprehensive. Zélia Profeta da Luz and Gustavo Romero, who debate the article, list some conditions in order for changes in the PVCLV to be successful: improvements in access and care for patients with VL; primacy of qualified scientific research in providing solid cost-effectiveness evidence to guide the incorporation of new control tools; strengthening of educational approaches that promote the population's active participation in VL control activities; and investment in environmental sanitation. Much remains to be done, and the central thrust in this struggle must be to strengthen the Brazilian Unified National Health System.

Guilherme L. Werneck

Associate Editor

-
1. Barreto ML, Teixeira MG, Bastos FI, Ximenes RA, Barata RB, Rodrigues LC. Successes and failures in the control of infectious diseases in Brazil: social and environmental context, policies, interventions, and research needs. *Lancet* 2011; 377:1877-89.