

## Geographical distribution of Lyme-like borreliosis in Brazil: Hot spots for research and surveillance.

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### Dear Editor,

Clinical cases of Lyme borreliosis in Brazil have been diagnosed since 1992 [1].

From studies that have accompanied cases of this disease in the country it's possible to identify that epidemiological, clinical, and laboratories aspects are different from cases of Lyme disease recorded in the United States and Eurasia, the Brazilian Lyme borreliosis has been called Lyme-like disease or Syndrome Baggio-Yoshinari [2].

The etiological agent causer of this disease has not yet been detected (isolation and molecular characterization) in human samples from the cases described in the country [2] and a portion of the medical and scientific community questions the occurrence of the disease in the Brazilian territory.

In order to increase the knowledge about Lyme-like borreliosis in Brazil, we analyzed the records included in the Gerenciador de Ambiente Laboratorial (GAL), which is the information system that collects the data on the requests for laboratory diagnostic tests in the scope of the Brazilian Health System.

During the years 2009 to 2016, 4078 laboratory tests for Lyme-like borreliosis were requested in 5.02% (280-5570) of the Brazilian municipalities (Figure 1).

Of these, 679 laboratory tests were reactive in the Federated Units (FU) of Espírito Santo 31.95% (217-679), Paraná 23.12% (157-679), Tocantins 17.52% (119-679), Mato Grosso do Sul 14.58% (99-679), Minas Gerais 8.24% (56-679), Mato Grosso 3.82% (26-679), Pará 0.14% (1-679), Rio Grande do Sul 0.14% (1-679), Santa Catarina 0.14% (1-679) and 0.29% did not respond to the residence FU (2-279) (Figure 2).

Reactive cases were detected by Western blotting tests (67.89%) and enzyme immunoassay 32.10% (218-679) in 1.92% (107-5570) of the Brazilian municipalities.

We analyzed the geographical groupings of municipalities

with suspect cases (Figure 1) and with reagents laboratory tests (Figure 2) by Kernel's density estimative. We found spatial interpolation with greater intensity in the states of Paraná, Minas Gerais, Espírito Santo and Tocantins (Figures 1 and 2).

Analyzing the information about the patients which occurred the clinical suspicions, it was verified that the majority of the cases reacted with male 62.59% (425-679), aged between 21 to 60 years 68.36% (466-679), residents of the urban area 42.70% (290-679).

The quality of epidemiological information (profile of suspected cases) may be hampered by the fact that the GAL does not have this attribution as the main purpose. The GAL is a laboratory information system and is not intended to collect epidemiological information.

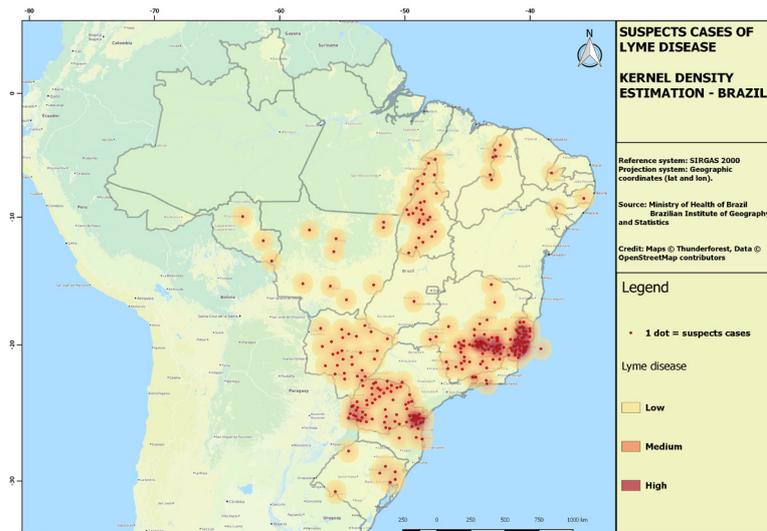
Lyme-like borreliosis is not a notifiable disease to the Brazilian Ministry of Health and official information is restricted to laboratory data and some states in Brazil do not include this information in the GAL.

We understand that the data presented here are preliminary to any assessment of the magnitude of the disease. We will not discuss the efficiency of the serological results, since in Brazil there are no official definitions on validated diagnostic methodologies for characterization of cases.

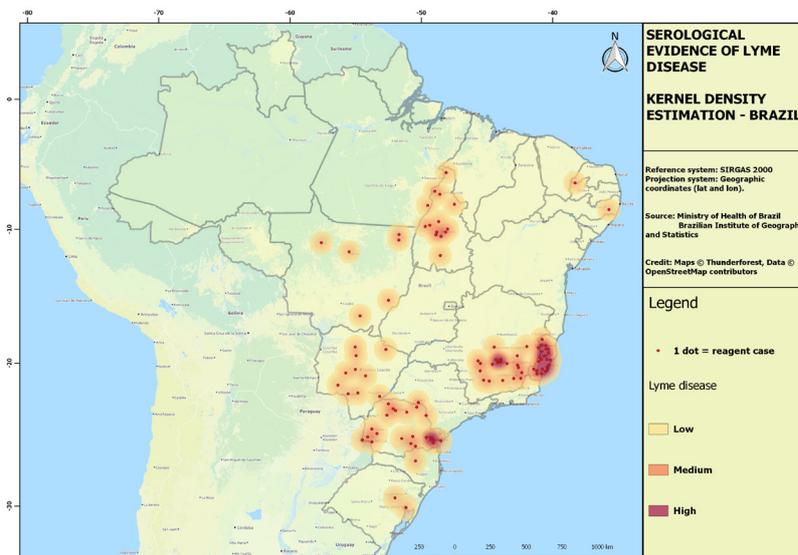
Our information draws attention to the need for research interventions and epidemiological surveillance in the areas where the disease hot spots were included.

It is estimated that in the United States of America 300,000 cases of Lyme borreliosis infections occur annually and 85,000 in Europe, demonstrating the magnitude of this important tick-borne disease in other parts of the world [3-5].

In Brazil, government investments could promote a better qualification of these clinical suspicions and consequently improvement of epidemiological information, helping to understand the cases of Lyme-like borreliosis.



**Figure 1.** Geographic distribution of the municipalities of residence of suspected cases of Lyme-like borreliosis in Brazil, according to the Kernel density estimative.



**Figure 2.** Geographic distribution of the municipalities of residence where serological evidence of Lyme-like borreliosis was detected according to the Kernel density estimation.

## References

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