The Brazilian Journal of
INFECTIOUS DISEASES

www.elsevier.com/locate/bjid

Letter to the Editor

Molecular detection of Feline Leukemia Virus in free-ranging jaguars (*Panthera onca*) in the Pantanal region of Mato Grosso, Brazil

Dear Editor,

The rising incidence of diseases that affect wildlife is associated with ecological changes in the natural habitat of the host or pathogen.[1] Anthropogenic factors such as fragmentation and conversion of natural habitats, the presence of humans living in or close to natural areas, and increased contact between domestic and wild animals are the cause of outbreaks of diseases.[2,3] Among the various pathogens that affect carnivores, viruses are the most significant due to their lethality.[3,4] Feline Immunodeficiency Virus (FIV) and Feline Leukemia Virus (FeLV) are important retroviruses that affect domestic cats and wild Felidae.[5] Human occupation of natural environments, with the consequent contact and exposure of wildlife to domestic animals, poses an increasing threat.[1] In this situation, Felidae are under threat because deforestation progressively reduces their habitats, and close contact with domestic animals poses a serious risk of infection. The aim of this study was to evaluate the occurrence of FeLV and FIV in free-ranging jaguars in the Pantanal region of Mato Grosso, Brazil.

Twenty-one jaguars (*Panthera onca*), eleven 4 to 8-year-old males and ten 4 to 9-year-old females, were captured between 2010 and 2014 at the Taiamã Ecological Station in the Pantanal (16°50′34.31″ S, 57°35′03,70′ W), located in the municipality of Caceres, MT. Permits were issued by SISBIO, the Brazilian Biodiversity Authorization and Information System, under numbers 30896-1 and 18699-1. Blood samples were drawn by femoral venipuncture and oral swab samples were collected from the oral mucosa of each animal, and the material was sent to laboratories for analysis. Serum samples (10 μL) were subjected to chromatographic immunoassays for the simultaneous detection of anti-FIV IgG antibodies and FeLV antigen using Bioeasy® Test kits, according to the manufacturer's protocol. DNA from blood and saliva was subjected to polymerase chain reaction (PCR) tests for the molecular diagnosis of FIV and FeLV. A positive sample was subjected to DNA sequencing using BLAST and the identity matrix of the nucleotide sequence of FeLV was used for comparison with sequences deposited in the GenBank.

The FIV tests did not yield any positive results neither with serological tests nor with PCR of blood and oral swabs. FeLV was detected in the blood of one (4.76%) 8-year-old animal that was PCR positive. All the saliva and serum samples were negative by the PCR and FeLV serological tests, respectively. The DNA sequencing of the positive sample revealed 98% identity with FeLV LTR sequence, showing a value of 3e-107 with access number (GenBank KU288756) deposited in the GenBank. A comparison of the identity matrix of nucleotide sequences of other FeLVs indicated 97.76% identity with gene sample M12500 of FeLV subgroup B. The detection of FeLV in the wild Felidae population, specifically in a free-ranging jaguar in the Pantanal, has not been previously reported. This study showed for the first time a molecular diagnosis of the occurrence of FeLV in a free-ranging jaguar in the Pantanal wetland of Brazil. The occurrence of this virus has been reported in other wild felines, but disease associated with infection by this virus must be investigated. The exposure of *Panthera onca* to infection suggests the need for continued monitoring and for the adoption of further steps, such as studies involving domestic cats as a source of FeLV infection, in order to prevent the infection from posing a threat to this species.

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

1. Mora M, Napolitano C, Ortega R, et al. Feline immunodeficiency virus and feline leukemia virus infection in free-ranging guignas (*Leopardus guigna*) and sympatric domestic cats in human perturbed landscapes on Chiloé Island, Chile. J Wildl Dis. 2015;51:199–208.
2. Schmitt AC, Reischak D, Cavlac CL, et al. Infecção pelo virus da leucemia felina e da peritonite infecciosa felina em felídeo selvagem de vida livre e de cativeiro da região do Pantanal mato-grossense. Acta Sci Vet. 2003;31:185–8.
3. Furtado MM, Filho JDR, Scheffer KC, et al. Serosurvey for selected viral infections in free-ranging jaguars (*Panthera onca*) and domestic carnivores in Brazilian Cerrado, Pantanal, and Amazon. J Wildl Dis. 2013;49:510–21.

4. Murray DL, Kapke CA, Evermann JF, et al. Infectious disease and the conservation of free-ranging large carnivores. Anim Conserv. 1999;2:241–54.
5. Sobrinho LSV, Vides JP, Braga ET, et al. Sorofrequência de infecção pelo vírus da imunodeficiência felina e vírus da leucemia felina em gatos do município de Araçatuba, São Paulo. Braz J Vet Res Anim Sci. 2011;48:378–83.

Carla Patricia Amarante e Silva [a], Selma Samiko Miyazaki Onuma [b], Daniel Moura de Aguiar [a], Valéria Dutra [a], Luciano Nakazato [a,*]

[a] *Universidade Federal de Mato Grosso, Cuiaba, MT, Brazil*

[b] *Estação Ecológica de Taiamã, Instituto Chico Mendes de Conservação da Biodiversidade, Cáceres, MT, Brazil*

* *Corresponding author.*
E-mail address: lucnak@ufmt.com.br (L. Nakazato).

Received 6 January 2016
Accepted 13 January 2016
Available online 29 March 2016

http://dx.doi.org/10.1016/j.bjid.2016.01.005