

Report of *Candidatus Mycoplasma haematoparvum* and *Mycoplasma haemocanis* canine infections in Massambaba restinga, Brazil

Relato de infecções naturais caninas por *Candidatus Mycoplasma haematoparvum* e *Mycoplasma haemocanis* na Restinga de Massambaba, Brasil

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Abstract

Tick-borne diseases are frequent in the southeastern section of Brazil. The most prevalent canine parasites diagnosed are *Ehrlichia canis*, *Babesia gibsoni*, *Babesia canis*, and *Anaplasma platys*, although *Mycoplasma haemocanis* and *Candidatus Mycoplasma haematoparvum* have also been detected in other regions of the country. Two clinically healthy dogs from a suburban area of the state of Rio de Janeiro had a history of being heavily infested with ticks and were examined at IDEXX Reference Laboratories, California for a tick panel check. One dog harbored DNA of *Candidatus Mycoplasma haematoparvum* and the other, the DNA of *Mycoplasma haemocanis*. These results reinforce the need for permanent monitoring for tick infestations and tick-borne parasites in southeastern Brazil, particularly considering the likely continuation of global climate changes that will contribute to the spread and increase of infections across the country.

Keywords: ticks, mycoplasmosis, canine parasites.

Resumo

Doenças transmitidas por carrapatos são frequentes na região sudeste do Brasil. Os parasitas caninos mais prevalentes diagnosticados são *Ehrlichia canis*, *Babesia gibsoni*, *Babesia canis* e *Anaplasma platys*, embora *Mycoplasma haemocanis* e *Candidatus Mycoplasma haematoparvum* tenham sido registrados no país. Dois cães clinicamente saudáveis de uma área suburbana do estado do Rio de Janeiro, Brasil, com histórico de forte infestação por carrapatos, foram examinados no Idexx Reference Laboratories, Califórnia, para verificação do painel de carrapatos. Um cão abrigava DNA de *Candidatus Mycoplasma haematoparvum* e o outro DNA de *Mycoplasma haemocanis*. Esses resultados sugerem que o monitoramento de infestações e parasitas transmitidos por carrapatos deve ser permanente no sudeste do Brasil, principalmente devido às mudanças climáticas globais que podem contribuir para a disseminação e para o aumento do número de infecções no país.

Palavras-chave: carrapatos, micoplasmose, parasitas.

Introduction

Tick infestations and tick-borne diseases are commonly diagnosed in Brazilian dogs, especially in those allowed to roam free outside of their homes (Juan szabó et al., 2001; Labarthe et al., 2003). Therefore, routine examination of dogs should always include a determination of whether the animal is or has been infected with tick-transmitted parasites. In Brazil, *Ehrlichia canis*, *Babesia gibsoni*, *Babesia canis*, and *Anaplasma platys* circulate among dogs in regions of the country where ticks are frequently reported (Moreira et al., 2003). Molecularly confirmed *Mycoplasma haemocanis* was first reported in 2003 (De Moraes, 2003) and *Candidatus Mycoplasma haematoparvum*, in 2008 (Santos et al., 2008). *Mycoplasma* spp. infections are seldom diagnosed in the country and



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have never been reported from the Massambaba restinga region of the state of Rio de Janeiro. *Mycoplasma haemocanis* and *Candidatus M. haematoparvum* have been reported in metropolitan Rio de Janeiro. The aim of this study was to report the occurrence of *Mycoplasma* spp. infection in healthy dogs from a suburban area of the eastern section of the state of Riode Janeiro, Brazil, where these pathogens have been poorly studied.

Materials and methods

The present study was approved by the Comissão de Ética em Pesquisa Animal of the Universidade Federal Fluminense, Niterói, RJ, Brazil (protocol number 00128/09). Two free-roaming, clinically healthy dogs from a suburban area of the state of Rio de Janeiro (22.92417°S; 42.22431°W) were found seropositive for *Anaplasma phagocytophilum* by an ELISA test (SNAP TEST 4Dx®, IDEXX Laboratories, Westbrook, Maine, USA). In the absence of clinical or hematological signs, DNA samples were sent for examination by a qPCR tick panel at the IDEXX Reference Laboratories in West Sacramento, California, USA.

Results

The dogs were found to harbor the DNA of two rare *Mycoplasma* species—*Candidatus M. haematoparvum* and *M. haemocanis*. The infection with *A. phagocytophilum* was not confirmed.

Discussion

The vast majority of canine infections with *Candidatus M. haematoparvum* and *M. haemocanis* are asymptomatic, even though the pathogens present a strong tropism for red blood cells and may cause hemolysis. Clinical signs are typically presented only if the dogs are immunocompromised or splenectomized, and include weight loss, anemia, and lethargy (Lester et al., 1995; Messick, 2003; Kemming et al., 2004). Therefore, because infected but immunocompetent dogs usually present no clinical signs, specific laboratory tests are not included in routine differentials.

In addition, most blood samples are sent to the laboratory as whole blood with an anticoagulant, usually edetic acid (EDTA). When whole blood is mixed with anticoagulants, the parasitic forms of hemotropic *Mycoplasma* are separated from the erythrocytes, impairing their visualization under light microscopy. These properties likely contribute to an underestimation of the prevalence of these canine infections. Further, since the pathogens are not included in differential diagnosis, missed cases contribute to keeping their true levels unknown and allowing them to remain in circulation. In Brazil, to date, few recent reports of these bacterial infections exist for the southeastern region, although they have been reported more commonly in the northeastern, mid-central, and southern regions (De Moraes, 2003; Santos et al., 2008).

This report suggests that these asymptomatic, *A. phagocytophilum* antibody-positive dogs that did not harbor *A. phagocytophilum* DNA had been exposed to infected ticks but overcame the disease (Aguero-Rosenfeld et al., 2000). Canine tick-related infections may be subclinical (Messick, 2003; Kemming et al., 2004) and tick infestations are common around the country (Dantas-Torres et al., 2006), favoring an on-going parasite presence once an area has been colonized. Furthermore, global climate changes are spreading the geographical distribution of arthropods, which will affect their worldwide distribution.

Conclusions

These results highlight the need for monitoring tick infestations and tick-borne parasites as a permanent practice in southeastern Brazil. This is especially important considering that global climate changes will likely contribute to their spread and to an increased number of infections in the country.

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