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

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Abstract

Background: 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 been registered in the country.

Methods: When two clinically healthy dogs from a suburban area of the state of Rio de Janeiro, Brazil with history of being heavily infested with ticks were examined at Idexx Reference Laboratories, California for tick panel check.

Results: One dog harbored DNA of candidatus Mycoplasma haematoparvum and the other DNA of Mycoplasma haemocanis.

Conclusions: These results suggest that monitoring for tick infestations and tick-borne parasites must be permanent in southeastern Brazil, especially due to global climate changes which may contribute to spread and increase the number of infections in the Country.

Introduction

Tick infestations and tick-borne diseases are commonly diagnosed in Brazilian dogs, especially those allowed to roam free around their homes (Cunha et al., 2001; Labarthe et al., 2003). Therefore, routine examination of those dogs should always aim to elucidate if 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 most regions of the country where ticks are frequently reported (Moreira et al., 2003). The species Mycoplasma haemocanis was registered, with molecular confirmation, in 2003 (De Morais, 2003) and candidatus Mycoplasma haematoparvum in 2008 (Santos et al., 2008). Although Mycoplasma spp. infections are rare in the Country and have never been registered at the Massambaba restinga, Mycoplasma haemocanis and candidatus Mycoplasma haematoparvum have been reported at the metropolitan Rio de Janeiro (SILVA, 2016). The aim of this study is to report the occurrence of Mycoplasma spp. infection in healthy dogs from a suburban area of the Eastern section of the state of Rio de Janeiro, Brazil, where those pathogens are poorly studied.
Materials & Methods

The present study was approved by the Comitê de Ética em pesquisa animal of the Universidade Federal Fluminense, Niterói, RJ, Brazil (protocol number 00128/09). Two free roaming around their homes clinically healthy dogs from a suburban area of the state of Rio de Janeiro (22.92417ºS; 42.22431ºW) were found seropositive for *Anaplasma phagocytophilum* on ELISA test (SNAP TEST 4Dx®) in 2005. In the absence of clinical or hematological signs, DNA samples from those animals were sent to be examined by qPCR tick panel of Idexx Reference Laboratories in West Sacramento, California, USA.

Results

The dogs were found to harbor DNA of two rare *Mycoplasma* species. One harbored *candidatus Mycoplasma haematoparvum* and the other *Mycoplasma haemocanis*, although the infection by *Anaplasma phagocytophilum*, was not confirmed.

Discussion

The vast majority of canine infections with *candidatus Mycoplasma haematoparvum* or *Mycoplasma haemocanis* is asymptomatic, even though the pathogens present a strong tropism for red blood cells and may cause hemolysis. The known clinical signs are presented only when dogs are immune compromised or splenectomized and include weight loss, anemia and lethargy (Kemming et al., 2004; Lester et al., 1995; Messick, 2003). Therefore, due to the fact that infected immune competent dogs usually present no clinical signs, specific laboratory tests are not included in routine differentials.

On top of that, it must be considered that most blood samples are sent to the laboratory in the form of whole blood with anticoagulant (usually EDTA). When the whole blood is mixed with anticoagulants the parasitic forms of hemotropic Mycoplasma are separated from the erythrocytes, impairing their visualization under light microscopy. These facts probably contribute to make these canine infections underestimated.

Since these pathogens are not included in differential diagnosis, missed cases contribute to keep their circulation unknown. In Brazil, up to date few reports of these bacterial infections have been made in the southeastern region, even though it has been reported in other regions.
The present survey suggests that asymptomatic Anaplasma phagocytophilum antibody positive dogs that harbored no A. phagocytophilum DNA were exposed to infected ticks and overcame disease (Aguero-Rosenfeld et al., 2000). It highlights that monitoring of tick infestations and tick-borne parasites circulation must be done permanently in southeastern Brazil. Especially because canine infections may be subclinical (Kemming et al., 2004; Messick, 2003) and tick infestations are frequent (Dantas-Torres et al., 2006), which favors parasite maintenance in a given area. Furthermore, the global climate changes tend to spread arthropods’ geographical distribution which will most certainly affect the tick-borne diseases distribution worldwide.

Conclusions

These results suggest that monitoring for tick infestations and tick-borne parasites must be permanent in southeastern Brazil, especially due to global climate changes which may contribute to spread and increase the number of infections in the Country.

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