Hemoparasitosis control in dogs in Campos dos Goytacazes, Brazil

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Hemoparasitosis control in dogs in Campos dos Goytacazes, Brazil – Control de hemoparasitosis en perros en Campos dos Goytacazes, Brazil

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Resumen

Este estudio informa sobre el diagnóstico, tratamiento y seguimiento de las principales hemoparasitosis que afecta a los perros en Campos dos Goytacazes, RJ, Brasil, entre 2008 y 2011. Las muestras de sangre periférica se tomaron en 259 perros y se prepararon frotis, etiquetados y teñidas utilizando panóptico rápido y se analizaron con microscopio óptico de 100 aumentos. Los animales diagnosticados como positivos para Rickettsiales fueron tratados con oxitetraciclina LA 20 mg/kg en inyecciones cada 48 horas durante siete días. Dipropionato de Imidocarb 5 mg/kg se administró por vía subcutánea a los animales positivos para Babesia spp. Todos los animales participantes fueron tratados para prevenir la infestación por ectoparásitos utilizando tópico fipronil punto-en el 1%. De los 259 animales analizados, 30 (11,6 %) fueron positivos para hemoparasitos. Durante el período de cuatro años de este estudio, el descenso de los casos positivos muestra que el seguimiento de los animales positivos, junto con las iniciativas de sensibilización para prevenir hemoparasitosis mejora la eficacia de las estrategias de control contra estas enfermedades en la comunidad estudiada.

Palabras claves: hemoparasitosis, tratamiento; perros; gatos.
Abstract

This study reports the diagnosis, treatment and follow-up of the main hemoparasitosis affecting dogs in Campos dos Goytacazes, RJ, Brazil, between 2008 and 2011. Peripheral blood samples were collected from 259 dogs. Smears were prepared, labelled and stained using fast panoptic and analyzed under optical microscope under 100 x magnification. Animals diagnosed positive for Ricketesiales were treated with oxytetracycline LA 20 mg/kg injections every 48 h for seven days. Imidocarb dipropionate 5 mg/kg was subdermally administered to animals positive for Babesia spp. All participating animals were treated to prevent infestation by ectoparasites using topical spot-on fipronil 1%. Of the 259 animals analyzed, 30 (11.6%) were positive for hemoparasites. During the four-year period of this study, the drop in positive cases shows that follow-up of positive animals, together with awareness initiatives to prevent hemoparasitosis improve the efficacy of control strategies against these diseases in the community surveyed.

Keywords: hemoparasitosis, treatment; dogs; cats.

Introduction

Due to their high prevalence, hemoparasitosis are considerably important diseases in veterinary medicine. However, hemoparasitosis raise public health concerns, since they are zoonoses that affect mainly children, the elderly and immunodepleted individuals (Almosny, 2002). These diseases occur worldwide, and are caused by obligate blood cell intracellular parasites transmitted by the bite of hematophagous arthropods, especially Rhipicephalus sanguineus, as well as by the genera Amblyomma and Anocentor, which also play a relevant role in the cycle of some of these diseases. These diseases affect several animal species, like dogs, cats, equines and bovines. Clinical manifestations vary and sometimes lead to death, and symptoms are similar, though unspecific. In dogs, the hemoparasites most commonly transmitted by ixodid ticks are the Ricketsias Erlichia canis and Anaplasma platys, the Micoplasmatacea species Mycoplasma haemocanis, and the protozoans Babesia canis and Hepatozoon canis (Figueiredo, 2011).

In Brazil, the first cases of human ehrlichiosis were recorded based on positive serologic diagnosis for E. chaffensis in individuals with symptoms that suggested ehrlichiosis, in the state of Minas Gerais (Costa, 2011).

The infection risk by E. canis is higher for dogs that are kept in houses than in flats, since the former are, in theory, more exposed to ticks than the latter (Costa, 2011). The main clinical changes observed in dogs infected with E. canis are apathy, anorexia, hyporexia, vomiting, oculonasal discharge, splenomegaly, pale mucosa, hemorrhage (petechia and epistaxis), uveitis
(Nakaghi et al., 2008), though vasculitis and neurological, muscle, ocular and polyarthritis signs are also observed. These clinical signs spontaneously regress within one and four weeks after infection, though dogs may remain asymptomatic (Costa, 2011).

Ehrlichiosis may be diagnosed based on the results of direct parasitology exams, by hematology, biochemical assays, culture, serology (indirect immunofluorescence assays and ELISA), in combination with the assessment of clinical signs and molecular biology techniques (Costa, 2011). Clinical suspicion may be confirmed by *E. canis* morluae and inclusions in white blood cell smears. However, it is important to emphasize that the absence of parasites in peripheral blood smears does not rule out infection (Nakaghi et al., 2008).

Babesiosis manifestations may be hyperacute, acute and chronic, though the disease may also remain asymptomatic. As a rule, clinical manifestations include fever, weight loss, anorexia, hematuria and jaundice. Under stress, after the administration of corticoids and in the occurrence of concomitant diseases, clinical signs may emerge in asymptomatic animals. The diagnosis of babesiosis is very important, since it is potentially transmitted via blood or through vertical transmission, when the offspring is subject to high mortality rates (Costa, 2011).

These pathologies have been extensively studied in the city of Campos dos Goytacazes, state of Rio de Janeiro, Brazil. The studies revealed high infection prevalence in dogs (Albernaz et al., 2007). In this scenario, the present study reports the diagnosis and treatment of the main hemoparasitosis circulating in dogs kept as pets in the district of Matadouro, in Campos dos Goytacazes, between 2009 and 2011. Also, positive animals were followed up in this period, the local population was briefed on the problem of tick infestation in pets, and prophylaxis of infestation was carried out.

**Material and methods**

The total of 259 dogs kept by the population living in the district of Matadouro, Campos dos Goytacazes, state of Rio de Janeiro, Brazil were used for this paper. Animals included were not sorted for breed, gender or age, and only dogs kept in the homes in the district were included. The number of animals examined in each year is shown in Table 1. The ear tip of each dog was shaved, cleansed using cotton soaked in ethanol 70º, and peripheral blood samples were collected thereon by puncture using a 25 x 0.7 mm needle. The first blood drop collected was used to prepare smears. All samples were individually labeled and sent to the Laboratory of Animal Clinic and Surgery, Livestock and Agricultural Technology Center, Universidade Estadual do Norte Fluminense Darcy Ribeiro, UENF.

Slides were stained using Panoptic fast staining (Newprov™) and then observed under 100x magnification (immersion). Positive diagnosis for
rickettsiosis and babesiosis were carried out after the detection of reproductive forms of the pathogens in the cytoplasm of infected cells. Smears and readings were carried out according to a double-blind design, to avoid reading bias.

The dogs that tested positive for *Babesia* spp. were treated with two subdermal doses of imidocarb dipropionate 5 mg/kg, administered at a 15-day interval. Animals positive for *Rickettsiales* were given intramuscle injections of oxytetracycline LA 20 mg/kg every 48 h for 7 days. All dogs participating in the study were also given topical spot-on fipronil 1%.

Additionally, meetings were held in Matadouro to discuss the subject and brief the population on the main prophylaxis and essential care measures for pets.

**Results and discussion**

Of the 259 blood smears carried out, morules were detected in 30 samples (11.6%), revealing positive hemoparasitosis for dogs (Table 1).

<table>
<thead>
<tr>
<th>Year</th>
<th>Samples collected</th>
<th>Positive for hemoparasites</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>51</td>
<td>08 (15,7%)</td>
</tr>
<tr>
<td>2009</td>
<td>60</td>
<td>07 (11,7%)</td>
</tr>
<tr>
<td>2010</td>
<td>76</td>
<td>08 (10,5%)</td>
</tr>
<tr>
<td>2011</td>
<td>72</td>
<td>07 (9,7%)</td>
</tr>
<tr>
<td>Total</td>
<td>259</td>
<td>30 (11,6%)</td>
</tr>
</tbody>
</table>

Similarly, Albernaz et al. (2007) observed 219 (13.89%) positive parasitosis cases in 1,576 slide of samples collected in Campos dos Goytacazes. In the following year, Miranda et al. (2008) carried out a survey about the prevalence of babesiosis in the same city, a parasitosis caused by the same vector that carries ehrlichiosis, *Rhipicephalus sanguineus*. The authors observed that only 30 (1.47%) of the 2,031 blood smears were infected with the protozoan, indicating that microscopy findings of ehrlichiosis were more prevalent than babesiosis. However, in 2006 another study, also carried out in Campos dos Goytacazes, reported that of the 576 slides inspected, only eight (1.38%) were positive (Almeida et al., 2006), revealing lower positivity for *Rickettsiales*.

In the city of Aracajú, state of Sergipe, Brazil, of 1,565 animals, 119 (7.60%) were positive on blood smears (Faierstein et al., 2008). Menezes et al. (2008) observed inclusions that suggested elementary *E. canis* corpuscles and morulae in the cytoplasm of mononucleated cells of 5.33% (4/75) of the
animals treated in Bahia Hospital, of which 75% (3/4) were confirmed positive by PCR.

In Jaboticabal, state of São Paulo, Brazil, Nakaghi et al. (2008) examined 30 dogs suspected to have ehrlichiosis, observing 28 positive cases. In blood smears, only one positive case was diagnosed (3.30%). Nevertheless, indirect immunofluorescence afforded to diagnose 19 (63.3%) positive animals, while Elisa detected 21 (70.0%) and PCR revealed 16 positive (53.30%) cases, showing that blood the study revealed a lower number of positive cases, compared with the results obtained in the city of Campos dos Goytacazes. These data show that the last three methods were more efficient to canine ehrlichiosis, in spite of the fact that they are more costly.

![Graph](http://www.veterinaria.org/revistas/redvet/n010114/011402.pdf)

Figure 1. Percentage of canines kept in the district of Matadouro, Campos dos Goytacazes, which were positive for hemoparasites between 2009 and 2011.

Figure 1 shows that the percentage of animals positive for hemoparasites dropped during the study, from 15.7% in 2008, to 11.7% in 2009 and 10.5% in 2012. However, the lowest value was observed in 2011, with 9.7% of positive animals. These data suggest that treatment and follow-up of positive animals, together with increased awareness of the general population and prophylaxis strategies show the efficacy of the control initiatives implemented in the community.

**Conclusion**

The results obtained in the present study show that, although hemoparasites remain prevalent in the district of Matadouro, laboratory diagnosis and the subsequent treatment of positive animals, together with awareness initiatives associated with prevention practices against infestation by ectoparasites and
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diseases represent an important tool to reduce hemoparasitosis in the community surveyed.

References