PREVALENCE OF BABESIA INFECTION ON RURAL AND URBAN DOG IN SOUTHWEST IRAN (AHVAZ)

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SUMMARY

Canine Babesiosis is an important worldwide, tick-born disease caused by apicomplexan hemoparasitic from genus Babesia. The aim of the present survey was to identify the current state of Babesia infection in rural and urban dogs from southwest Iran (Ahvaz). For this reason within 2 years, 200 rural dogs from 5 village around Ahvaz and 200 urban dogs referred to the veterinary hospital of Shahid Chamran University were examined for presence of Babesia spp. After recording the sex and the age of dogs, blood samples were taken from cephalic vein. Then peripheral thin blood smears prepared and stained with giemsa for parasitological examination. The result revealed that among 400 dogs, 15 dogs (3.75%) were infected with Babesia canis. This study was showed from 200 rural dogs, 11 dogs (5.5%) and from 200 urban dogs, 4 dogs (2%) were infected with B. canis. In this survey there was no significant relationship between sex, age and season in urban dogs regard to infection with Babesia canis. Significant relationship between season and infected rural dogs in Ahvaz was revealed (P<0.05). The infectivity rate to this parasite was low, but transmission of the protozoan to dogs should be intentioned.

INTRODUCTION

Babesiosi is a tick borne blood protozoon disease of domestic and wild animals, occurs in the southern USA, Central and South America, Africa, Asia and Southern Europe. Out of 100 species, three Babesia species are known to cause natural infection in dogs, i.e, Babesia canis, Babesia gibsoni and Babesia vogeli [2]. Babesia canis are considered to be the most important species affecting the dogs. [6]. Few epidemiological studies addressing the prevalence of babesiosis have been conducted in large urban centres in Iran. Babesia canis found as a trophosrote in erythrocytes, multiply by binary fission to produce pairs of piriform bodies. This parasite cannot survive outside the dog or tick vector. Dogs become infected during parasitemia, which lasts few days after infection. Clinically recovered dogs may have periodic parasitemia. A tick vector Rhipicephalus sanguineous (Brown Tick). Haemaphysalis leach, Hyalomma plumbeum, Demacentor andersoni and D marginata can also transmit these diseases [6].

The objective of the present study was to find out the percentage of Babesiosis in Ahvaz, Iran. This may help to present true picture of this disease in Iran.

MATERIAL AND METHODS

Study area

The study was conducted in the Ahvaz (Sought west of Iran; 31/24 N, 48/49W; altitude 18 m), which is located in an area known as the Khouzestan plain.

Collection of blood samples

In order to determine the prevalence of canine babesiosis within the dog population of the area, blood samples were collected in 2009 from 400 dogs (200 rural and 200 urban) of both sexes and of various breeds. The number of samples collected was based on the expected prevalence of infection (5%). The animals were selected through a systematic sampling procedure based on a list of the existing dogs in the municipality. About 1ml of blood was collected from cephalic or jugular vein of each dog with the help of sterile disposable syringe and needle. Additional data including the name, sex, age, breed and phenotypic description of the dog, and the residential address, were recorded.

Diagnosis

The blood smear were stained with Diff. Quik and Giemsa stain. The stained smears were examined under the microscope for the demonstration of Babesia. [3].
Figure 1. Babesia canis detected in blood smear of dogs in Ahvaz (×1000).

RESULTS

As shown in Table 1, the overall prevalence of Babesia spp. in dogs was 3.75% (15 dogs) among 400 dogs by Giemsa staining.

Table 1: The number of dogs infected with Babesia spp. in Ahvaz

<table>
<thead>
<tr>
<th>origin</th>
<th>Numbers examined</th>
<th>Numbers infected</th>
<th>Infection Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>200</td>
<td>11</td>
<td>5.5</td>
</tr>
<tr>
<td>Urban</td>
<td>200</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>15</td>
<td>3.75</td>
</tr>
</tbody>
</table>

Sexual distribution of canine babesiosis in Ahvaz presented in the Table 2 revealed that 10 of 250 male dogs and 5 of 150 female dogs were positive.

Table 2: The number of dogs infected with Babesia spp. by sex.

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of positive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10</td>
<td>250</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>400</td>
</tr>
</tbody>
</table>

DISCUSSION

Babesia spp. are protozoa; organism that parasitize erythrocytes, causing anemia in the host. Many different species exist with varying host specificity [4]. B. canis and B. gibsoni are two organisms commonly known to infect dogs. Both organisms have Ixodid tick vectors and are found throughout Asia, Africa, Europe, Middle East and North America, with B. canis being more prevalent [6]. However, Rhipicephalus sanguineus and Dermacentor variabilis are believed to be potential vectors of disease [2]. The data collected showed that Babesiosis is a common disease with low prevalence of dog in the Ahvaz region.

Brown dog ticks, when submitted to unfavorable conditions (low temperature, low humidity and absence of hosts) reduce their metabolic rate in a phenomenon known as diapauses [1]. Such changes reduce oviposition, increase incubation time of the eggs and can even inhibit the questing behavior typical of the host-seeking process [5].

CONCLUSIONS

This study suggests that the epidemiology of infection by this protozoan in the Ahvaz differs from that found in the other cities of Iran. It may be that transmission of babesiosis within different regions of Iran is related to the variants of the ixodid tick found in those areas. The infectivity rate to this parasite was low, but transmission of the protozoan to dogs should be intentioned.
REFERENCES


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