DETECTION OF BABESIA CANIS IN INDIGENOUS DOGS IN KANKE LOCAL GOVERNMENT AREA OF PLATEAU STATE

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ABSTRACT

Babesiosis is a tick borne disease caused by the protozoan blood parasite Babesia canis that destroys red blood cells. This study is aimed at detection of Babesia canis in indigenous dogs in Kanke Local Government Area in Plateau State using parasitological technique. One hundred (100) dogs screened were randomly selected from households within the area. Data obtained were analyzed using chi- square statistical analysis and simple percentage. Overall results show an infection rate of (15.00%). The female 8(53.33%) and male 7(46.67%) infection rate was recorded. The adults showed higher prevalence 14(93.33%) than puppies 1(6.67%) of the infected dogs, adult had 14(18.40%) and puppies had 1(4.20%) infection rate. There was 1(6.67%) below normal temperature, 10(66.67%) normal temperature and 4(26.67%) above normal temperature infection rate respectively. No significant difference ($P>0.05$) was observed between gender and age while there was significant difference ($P<0.05$) between the temperature of dogs examined. Therefore recommendation was made based on seasonal variation, molecular diagnostic techniques and serological examination.

Key words: Detection, Babesia Canis, Indigenous, Dogs

INTRODUTION

Canine babesiosis is a worldwide, tick-borne, protozoal hemoparasitic disease caused by hemoprotozoan parasites of the genus Babesia (Homer et al., 2000). The two predominant species capable of naturally infecting dogs are Babesia gibsoni and Babessia canis(Boozer and macintire, 2003). Babessia gibsoni is a small and pleomorphic organism, and B. canis is a large, piriform-shape organism that exists singly or paired within erythrocytes (Taboada and Lobetti, 2006). Atrinomail nomenclature system for B. canishas been proposed as B.canis canis,B. canis vogeli, and B.canis rossi based on genetic, serologic, and immunological cross reactivity studies (Uilenbery et al, 1989; Taboada and Lobetti, 2006; Irwin, 2009).Following the bite of an infection tick, Babesia spp. Trophozoites are released into host circulation and infect erythrocytes(Homer et al., 2000). Ticks are attached to parasitemic dogs and become infected with Babesia spp. when they ingest a blood meal. Cases of canine babesiosis may present with a wide variety of clinical signs, ranging from a hyperacute, shock-associated, hemolytic crisis to innapparent and subclinical infection. The acute form of babesiosis is characterized by clinical signs such as pyrexia, weakness, mucous embrane pollar, depression, lymphadenopathy, splenomegaly, and general malaise (Homer et al., 2000; Boozer and macintire,2003).

Materials and Methods

The study was conducted in Plateau State. Plateau State is located in Nigeria middle belt with an area of 26,899 square kilometers.

A total of 100 blood samples were collected from Cephalic vein of local dogs in randomly selected households in the study area. Information on sex, age and rectal temperature were also recorded. 5ml blood sample were collected aseptically, after proper restraining using needle and syringes from the cephalic vein of each dog into Ethylene diamireatetra acetic acid (EDTA) bottles and followed by gently tilting and turning of the bottle containing the blood samples to mix with the anticoagulant. Each sample was labeled from 1 to 100, kept in plastic container containing ice packs at 4 C to and C and were transported to the parasitological laboratory of the National Veterinary Research institute, Vom for microscopic examination.

The blood sample were analyzed using thin blood smear technique of Giemsa (1951) adopted by Ochei (2007). The data collected were analysed using descriptive statistics (percentages and tabulations). The Chi Square was used to determine the association between the occurrence Babesia species in relation to age and sex. Value of P<0.05 was considered significant.

Results and Discussion

The result of the study were as presented in Table 1-3.

Table 1: Prevalence of *Babesia canis* Based on Gender.

	No. Examined (%)	**No. Positive (%)**	**No. Prevalence (%)**
Male	51 (51.00)	7(13.73)	7(46.67)
Female	49(49.00)	8(16.33)	8(53.33)
Total	**100(00.00)**	**15(15.00)**	**15(100.00)**

Chi Square (1), 100=0.0978 P=0.75427 (P>0.05)

Table 2: Prevalence of *Babesia canis* Based on Age.

	No. Examined (%)	**No. Positive (%)**	**No. Prevalence (%)**
Puppy (<1 year	24 (24.00)	1(4.20)	1(6.67)
Adult (>1 year	76(76.00)	14(18.40)	14(93.33
Total	**100(00.00)**	**15(15.00)**	**15(100.00)**

Chi Square (1), 100=2.3034 P=0.12909 (P>0.05)

Table 3: Prevalence of *Babesia canis* Based on Rectal Temperature.

	No. Examined (%)	No. Positive (%)	No. Prevalence (%)
T1	6(6.00)	1(16.60)	1(6.67)
T2	50(50.00)	10(20.00)	10(66.67)
T3	44(44.00)	4(9.09)	4(26.67)
Total	**100(00.00)**	**15(15.00)**	**15(100.00)**

Chi Square (1), 100=1.6429 P=0.04398 (P<0.05); T1= below normal temperature (<37.5°C); T2= normal temperature (37.5 – 38.9°C); T3= above normal temperature (>39°C)

The 15% prevalence of Babesia species in dogs in Kanke LGA of Plateau State is an indication of the occurrence of the tick vector Rhipicephalus sanguineus in the study area. This concurred with the report of Taylor et al (2007) who stated that Babesia is a widely distributed haemoparasite of dogs anywhere the tick vector Rhipicephalus sanguineus occurs. The prevalence of 15% infection is slightly high above the observations of Obeta et al., (20U9) who recorded 11.66% and earlier study carried out in Makurdi by Amuta et al, (2010) recorded 10.2% infection with Babesia. This could be attributed to differences in geographical conditions.

The prevalence rate of Babesia canis was higher among adult dogs than puppies. It could be due to lowered immune system of the adult compared with puppies. This confirms to the report of Egege er al, (2008) who reported that repeated tick bites could pre-expose the adults to infection. Similarly, the result agrees with the work of Obeta et al, (2009) who recorded higher prevalence of blood parasites among older dogs than puppies, but in contrast to the report of Okubanjo et al., (2013) who reported a higher prevalence in younger dogs below one year than in older dogs. The prevalence rate based on temperature shows significant difference pyrexis was statistically related to the prevalence of Babesia this could possibly be due to variation in the number of sampled dogs. This is in agreement with the findings of (Urquhart et al., 2004), (Daniel et al., 2016). Similarly, Cynthia and Scott, (2005) stated that acute disease generally runs a course of one week and the first sign is fever.

Conclusion and recommendations

The detection of *Babesia canis* of dogs in Kanke, Plateau State in this study shows there was no Significant difference (P>0.05) between the prevalence of Babesia canis with gender and age while there was significant difference (P<0.05) between the prevalence of Babesia canis with temperature of dogs examined. Recommendations are made for further work on the following: Based on seasoned variation**,** molecular diagnostic techniques**,** Serological examination.

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