
PREVALENCE OF *BABESIA OVIS* IN MAIDUGURI METROPOLIS, NIGERIA

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ABSTRACT

An investigation to confirm the prevalence of caprine babesiosis between January and November 2002 in Maiduguri revealed that out of the one hundred and thirty (130) Giemsa-stained blood films of goats examined 6 (4.6%) were found infected with *Babesia ovis*. Also of the seventy – seven (77) males and fifty- three (53) females examined the prevalence rates were 3.9% and 5.7% respectively. Sixty –two (62) young (≤ 6 months) goats examined had a prevalence of 2.2%, while the sixty –eight adult (> 6 months) goats examined had 5.9% infection rate. Among the breeds examined thirty (30) Sokoto red had a prevalence of 6.7%, while twenty (20) Kano brown and eight (8) Borno white had 5.0% and 3.8% respectively. The mean \pm SD packed cell volume (PCV%) of the goats examined based on their sex and age showed that *Babesia* infected male and female goats had 19.5 ± 9.2 and 22.5 ± 10.6 , while infected young and adult goats had 19.0 ± 12.7 and 22.0 ± 5.7 respectively. There was an indication of anaemia for some of *Babesia* infected goats.

Keywords: *Prevalence, Babesia ovis, Goats, Maiduguri, Nigeria.*

INTRODUCTION

Babesiosis is one of the most important haemoparasitic tick-borne diseases of goats caused by *Babesia ovis*, *B. motasi* and *B. crassa* (Aktas *et al.*, 2005), with serious economic losses to livestock production in the tropics (Nyindo 1992). Generally, the prevalence of the disease in Nigeria though low has been reported previously (Rabo *et al.*, 1995) and the disease is mostly exacerbated by the extensive or transhumance livestock management systems that exposes the host to the tick vectors; and also nutritional stress. *Babesia ovis* was reported to be extremely widespread in sheep and goats while *B. motasi* and *B. crassa* were spread to a lesser degree (Theodoropoulos *et al.*, 2006). However, Luo *et al.*, (2005) identified an unnamed *Babesia* species in ruminants based on small subunit ribosomal RNA gene sequences. Information on the prevalence of caprine babesiosis in the semi-arid zone of Maiduguri is not fully elucidated and thus the need for this study to provide such data.

Materials and Methods

Sample and data collection

A total of one hundred and thirty blood samples of goats slaughtered at the Maiduguri Metropolitan abattoir were collected from the jugular vein into vacutainer tubes containing ethylene diamine tetra- acetate (EDTA). The gender, breed and age of the goats examined were recorded.

Blood Examination

Thin blood smears were made on clean glass slides, air dried and fixed with methanol for 3 minutes, stained with Giemsa for thirty (30) minutes. The slides were then washed with buffered distilled water, and examined under oil immersion at x100 objective of the light microscope (Nawathe et al 1995) to identify the parasites as described by Soulsby (1982).

Statistical Analysis

All Data obtained were statistically analyzed using the Students' "t" test with p values equal to or less than 0.05 regarded as significant. (GraphPad InStat 1998)

RESULTS

One hundred and thirty (130) Giemsa-stained thin blood films made from goats were examined in this study and 6(4.6%) were found to be infected with *Babesia ovis* (Table1). Seventy seven (77) males and fifty three (53) females were examined with a prevalence of 3.9% and 5.7% respectively. Sixty two (62) young (≤ 6 months) goats examined had a prevalence of 3.2% while the sixty-eight adult (> 6 months) goats had 5.9%. Among the breeds examined, the thirty (30) Sokoto red examined had a prevalence of 2(6.7%), while the twenty (20) Kano brown and eighty (80) Borno white examined had 5.0%, and 3.8% respectively. Table 2 shows the mean \pm SD packed cell volume of the goats examined based on their gender and age with *Babesia* infected male and female goats having 19.5 ± 9.2 and 22.5 ± 10.6 respectively, while infected young and adult goats had 19.0 ± 12.7 and 22.0 ± 5.7 respectively.

Figure 1 shows a photomicrograph of *Babesia ovis*.

Table 1: Prevalence of caprine babesiosis based on gender, age and breed in Maiduguri, Nigeria.

	Number of goats examined	No(%) infected
Overall	130	6(4.6)
Gender:		
Male	77	3(3.9)
Female	53	3(5.7)
Age:		
Young (≤ 6 months)	62	2(3.2)
Adult (> 6 months)	68	4(5.9)
Breed:		
Sokoto red (Maradi)	30	2(6.7)
Kano brown	20	1(5.0)
Borno white (Sahel)	80	3(3.8)

Table 2: Mean ± SD packed cell volume (PCV) values of goats examined based on gender and age.		
	Packed cell volume (PCV%) (Mean ± SD)	
	Apparently healthy	Infected
Gender:		
Male	29 ± 9.2	19.5 ± 9.2
Female	33.5 ± 12.7	22.5 ± 10.6
Age:		
Young (<= 6 months)	29 ± 12.7	19 ± 12.7
Adult (> 6 months)	33 ± 12.7	22 ± 5.7

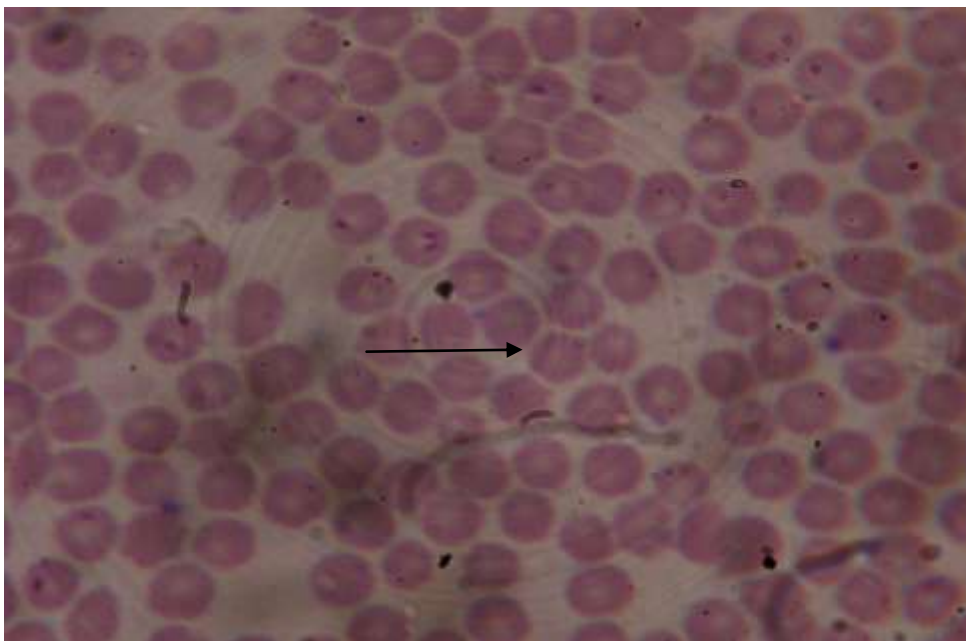


Figure 1: Photomicrograph (indicated by an arrow) of *Babesia ovis* (paired and pyriform in shape)

DISCUSSION

The results of this study has shown that the prevalence of caprine babesiosis due to *Babesia ovis* in this semi arid northeastern Nigeria is low, which may agree with earlier reports by Barnett (1963) for the Savannah and Beaton (1963) for the Niger basin area of Nigeria, that it may be as a result of diagnostic tools used which appear to be less sensitive in detecting light infections. However, Nagore *et. al.*, (2004) reported that babesiosis is duly linked to rainfall, gender, age and husbandry management systems, and is more pronounced when animals undergo nutritional stress during drought or semi drought conditions, which is common in arid climates (Rabo *et al.*, 1995). The finding of *Babesia ovis* as responsible for caprine babesiosis in this study confirms the findings of Ahmed *et. al.*, (1994) that it is a common parasite of small ruminants in the dry Savannah and are of the small form (Nyindo 1992). The observation of higher but insignificant ($p>0.05$) prevalence of infection in adult than young; female than male goats and among breeds agrees with the findings of Fayer (1980) and Colditz *et. al.*, (1996) that immunity is usually associated with previous exposure to the parasites in addition to nutritional status and not age, gender or breed per se. Anaemia due to a low packed cell volume values was observed, which could be due to intraerythrocytic nature of the parasite leading to red blood cell destruction (Soulsby 1982). In conclusion flock owners should emphasize tick control, routine vaccination in addition to treatment of sick cases.

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