

IJBHS 2006017/2205

Prevalence of Equine Babesiosis in Maiduguri, Nigeria

A. A. Biu*, M. I. Ahmed and A. I. Yunusa

Department of Veterinary Microbiology and Parasitology, Faculty of Veterinary Medicine, University of Maiduguri,
Maiduguri, Nigeria

(Recd. May 24, 2006)

ABSTRACT: Prevalence of babesiosis in horses stabled around Maiduguri metropolis was investigated in this study. Giemsa stained thin blood smears revealed a prevalence of 9(9%) for the disease with *Babesia equi* as the specie identified. Prevalence for the disease based on the sex and age of the horses indicated that female horses possessed a statistically significant higher prevalence 6(12.5%) compared to the males with 3(6.25%) ($P<0.05$).

Also the young horses were more infected 4(7.39%) though statistically insignificant ($P>0.05$) compared to the adults with 5(6.49%). Packed cell volume values determined in the study showed infected female horses with a lower mean of 19% compared to that of infected males 25.5%. Also infected young horses had a higher PCV of 26.5% compared to the infected adults with 19.0%. There is however, an indication of anaemia in the horses examined in the study.

Keywords: Babesiosis, Equine, Piroplasmosis, Nigeria.

Introduction

The association between man and horses is immemorial, and serve as means of transport used for traditional durbars, races, polo games and as meat for food (Cholukuri, 1994). Unfortunately domesticated ones are afflicted by several parasitic diseases, one of which is babesiosis which hampers their productivity (Roberts, 1968; Rabo *et al.*, 1995).

Aetiological agents of equine babesiosis otherwise called biliary fever are *Babesia equi* and *B. caballi* which are both endemic in many parts of Europe, Africa, Arabia and Asia with most tropical and subtropical areas worldwide harbouring the suitable tick vectors (Schein, 1988). Often infection is characterized by fever; progressive anaemia and pregnant animals may abort (De Waal and VanHeerden, 2004).

*To whom correspondence should be addressed at P.O. Box 8136, University of Maiduguri, Maiduguri, Nigeria.

There is dearth of data in this semi-arid region of Northern Nigeria on equine babesiosis, the readily available documented report on horses is that provided by Nwosu *et al* (1990) on parasitic helminthes and thus with the presence of large numbers of horses in this region coupled with the frequent movement of apparently healthy carriers and the existence in large numbers of tick vectors (Biu and Nwosu, 1998), there was the need to investigate the status of babesiosis with the aim of suggesting ways of improving stables.

Materials and Methods

Blood samples were randomly collected from the jugular veins of stabled horses within Maiduguri metropolis into ethylene diamine tetra acetic acid coated vacutainer tubes and taken to the parasitology laboratory, University of Maiduguri. Thin blood smears were made from the fresh blood and stained with Giemsa by standard microscopic methods for the evaluation of intracellular *Babesia* parasites (Gelfard, 1995).

The micro-haematocrit method was used to determine the packed cell volume (PCV) as described by Rabo *et al.*, (1995). The blood was mixed thoroughly and capillary tubes were filled at about $\frac{3}{4}$ with blood anticoagulated with ethylene diamine tetra acetate (EDTA). One end of each capillary tube was sealed with plastiseal and loaded symmetrically unto a micro-haematocrit centrifuge (Hawksley, England) with the sealed end uppermost and centrifuged at 1200rpm for 5 minutes and the PCV read using the haematocrit reader (Hawksley, England).

The various data obtained based on the PCV of the horses, their sex and age were analysed statistically using the students paired "t" test with "P" values equal to or less than 0.05 regarded as significant.

Results

The result of this study shows that of the 100 horses examined for babesiosis 9 (9%) were infected with *Babesia equi* (Table 1). The prevalence of *Babesia equi* based on the sex and age of the horses examined is also shown in Table 1. Of the 48 male horses examined, 3(6.25%) were infected which was lower (statistically significant ($P<0.05$) compared to that of the female horses with 6(12.5%). Also young horses were more infected 4(7.39%) though statistically insignificant ($P>0.05$) as compared to the adults with (6.49%).

Table 2 shows the mean (range) packed cell volume values of the infected horses based on their sex and age. The infected female had a lower PCV of 19% compared to the PCV of infected males (25.5%). Also the young horses possessed a higher PCV of 26.5% compared to the adults with 19.0%. There is however an indication of anaemia in the horses examined in the study.

Table 1: Prevalence of babesiosis based on sex and age of horses.

	Total examined	No (%) +ve	Relative Risk (RR)	95% confidence interval
All horses	100	9(9)		
Sex				
Male	48	3(6.25)	0.4708	0.19-1.19 ^{NS}
Female	52	6(12.5)	2.12	0.84-5.37 ^{NS}
Age				
Adult	77	5(6.49)	0.89	0.33-2.44 ^{NS}
Young	23	4(7.39)	1.12	0.41-3.08 ^{NS}

NS = Not statistically significant.

Table 2: Packed Cell Volume (PCV) in infected horses examined based on sex and age.

PCV of infected horses		
	Range	Mean
Sex		
Male	21-30	25.5
Female	9-29	19.0
Age		
Adult	9-29	19.0
Young	23-30	26.5

Discussion

This investigation has revealed a prevalence of *Babesia equi* in stabled horses around Maiduguri metropolis, which conforms with the reports by Schein, (1988) that the parasite is endemic in Africa especially in the study area where the suitable vectors are abundant (Biu and Nwosu, 1995).

Although the prevalence was low for the disease, Bose *et al.*, (1995) have reported that, it can be as a result of carrier status of the horses, in which generally parasites may not be detected in Giemsa stained blood smears.

The variation in the rates among the sexes and ages of the horses examined may be explained by Losos, (1986) that age along side genetic factors affects resistance to the disease.

The infected horses indicated anaemia with low PCV values which agrees with the description of the parasites by Soulsby (1982) that as piroplasms *Babesia* species invade the red blood cells lysing them and subsequently leading to anaemia.

References

- Bi, A.A. and Nwosu, C.O. (1998). Seasonal prevalence of cattle ticks in Maiduguri, Borno State. ESN Occasional Publications, 31: 133-139.
- Bose, R.; Jorgensen, W.K.; Dalglish, R.F.; Friedhoff, K.T. and De-vos, A.J. (1995). Current state and future trends in the diagnosis of babesiosis. Vet. Parasitol. 57: 6-74.
- Cholukuri, B. (1994). Equine piroplasmosis. American International Journal of Equine Research 6:4.
- Dewaal, D.T. and Van Heerden, J. (2004). Equine piroplasmosis. In: Infectious diseases of livestock. Eds: Coetzer, J.A.W. and Tustin, R.C. 2nd ed., Oxford University Press, 1: 425-434.
- Gelfard, J.A. (1995). Babesiosis. In: Mandell, E.L.; Bennett, J.E.; Dolin, R. (Eds.). Principles and practice of infectious diseases. 4th ed. Churchill Livingstone, New York, 58: 1-8.
- Losos, G.J. (1986). Infectious tropical diseases of domestic animals. Longman Scientific and Technical Group, pp. 3-9.
- Nwosu, C.O.; Srivastava, G.C. and Abdullahi, A.N.J. (1990). Helminth parasites of equine in Borno State, Nigeria. Trop. Anim. Prod. Invest., 1: 14-20.
- Rabo, J.S.; Jaryum, J. and Mohammed, A. (1995). Outbreak of bovine babesiosis in Monguno Local Government Area of Borno State, Nigeria. A case study of animals of Borno 11/12: 345-348.
- Roberts, E.D. (1968). Equine piroplasmosis. Journal of the American Vet. Med. Assoc. 141: 1323 – 1329.
- Schein, E. (1988). Equine babesiosis. In: Ristic, M. (ed.). Babesiosis of domestic animals and man. CRC Press, Florida, pp. 198-208.
- Soulsby, E.J.L. (1982). Helminths Arthropods and Protozoans of Domesticated Animals, 7th ed. Bailliere Tindall, London, pp. 706 – 728.