

Pre and Post Polo Competition Prevalence of Equine Babesiosis in Stable Horses in Ibadan, Oyo state, Nigeria

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ABSTRACT

The study was carried out at Polo Club Ibadan. Fifty apparently healthy horses comprising of Sudanese, Argentinian and local breeds were used. Blood samples were collected before and after the games using jugular venipuncture. Thin smear was prepared using standard procedure, stained and viewed under microscope for level of parasitaemia. 14.0% of local breed were positive for babesia parasite at pre polo competition phase, while 22.0% tested positive at the post polo competition phase. Argentinian and Sudanese breeds had 0 % prevalence at pre and post polo competition phases. At pre polo competition phase, horses between 24-40 months, 40-80 months and 80 months and above had 10%, 2% and 2% prevalence respectively, while horses between 24-40 months, 40-80 months and 80 months and above had 12%, 6% and 4% prevalence respectively at post polo competition phase. Likewise, mares had 8% prevalence stallions had 6% prevalence at pre polo competition phase while 12% mares and 10% stallions had babesia parasite at post polo competition phase.

It could be concluded that prevalence of equine babesiosis was generally low and common in local breed of horses mostly mares at their young active ages both at pre and post polo competition phases. Also, horses are predisposed to infestation following the competition.

Keywords: Equine babesiosis, Prevalence, breeds, Polo, Sex

INTRODUCTION

Horses are companion animals that play important role in national, state and local economics. It is of high importance in agriculture, business, sport competitions, entertainment and armed forces. There are different breeds of horses which include, American quarter, Arabian, Thorough breed, Spanish mustang, Andalusian, Argentina, Sudanese, Indigenous (local breed) etc Horse interact with human in variety of ways, and due to their complexity they have been used for several purposes that are very tedious in nature. During grazing and traction horses are being exposed to ticks infestation which are vector of babesiosis that affects animal and man.

This hemoparasitic disease has adverse effect on health, productivity and working capacity of animals. In other to prevent this menace in the horse which has serious detrimental effect, there is need to study the prevalence of babesiosis in horse.

Equine babesiosis is a tick-borne protozoan disease caused by two intraerythrocytic parasites, *Babesia equi* and *Babesia caballi*, the disease affects horses, mules, donkeys form. It characterized by fever, anemia, icterus, hepato and splenomegaly, intravascular hemolysis and petechial hemorrhages of the mucous surfaces, hemoglobinemia and hemo-globinuria (Brooks *et al.*, 1996; Radostitics *et al.*, 2000). Equine babesiosis has a worldwide distribution, being endemic in most tropical and subtropical areas of the world as well as in some temperate climatic zones, once infected; horses become carriers of *Babesia sp.* and potential disseminators of the parasite (Brunning, 1996).

Clinically infected horses show signs of fever, increase respiratory and heart rates accompanied with loss of appetite, sweating, congested mucous membranes with petechial hemorrhages. The diseased

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horses were also disinclined to move and in-coordinated, icteric and edema of fetlock joint were noticed when the disease progresses. Diseased horses also suffer from panting with labored respiration, depression, passing of brownish coffee-like urine; moreover colicky signs have been seen accompanied with diarrhea and/or constipation.

Diagnosis of equine babesiosis can be made from a combination of clinical signs, examination of stained blood in a susceptible animal (Phipps *et al.*, 1996), polymerase chain reaction (PCR) (Rampersad *et al.*, 2003; Vial *et al.*, 2006) or xeno diagnosis. Due to the low parasitaemia, the demonstration of the parasite in thin blood smears is often very difficult (Heerden 1996; Phipps *et al.*, 1996). Thick blood smears are therefore a recommended technique for parasite detection, particularly with low parasitaemia. The complement fixation test (CFT) is of preferred use (Schein 1988), helping to differentiate between *Babesia caballi* and *Theileria equi* infections. CFT in combination with the indirect fluorescent antibody (IFA) test is preferred for detection of carrier and chronic cases and for the purpose of screening horses before exportation to countries which are free from the disease (Schein 1988; Phipps *et al.*, 1996; Brunning 1996). However, limitations of both CFT (Phipps *et al.*, 1996) and IFA tests (De Waal, 2006) include the occurrence of false-positive and false-negative results. Another problem is the occurrence of cross-reactions in the CFT and IFA test

More recently enzyme-linked immunosorbent assays (ELISA) have been used in experimentally infected horses, but serological cross-reactions also have been encountered. New ELISA tests based on recombinant antigens and specific monoclonal antibodies have been developed for the detection of both parasites, but although the sensitivity appears to be better than the CFT, further validation studies are recommended (De Waal *et al.*, 2004)

MATERIALS AND METHOD

Community Entry

Gaining access to the polo club was done by approaching the stable manager and private horse owners. Their consents were given and samples were taken with the help of the caregivers and the grooms.

Study Area

The study was carried out at Polo Club Ibadan and samples were sent to Veterinary Teaching Hospital laboratory University of Ibadan, Ibadan, Nigeria. The pre game samples were collected a week to the commencement of the polo game while the post game samples were taken a week after the game has ended. Each horse under study was number tagged so that there would not be any mix up in the taking of corresponding samples at the post game phase and this was also made possible because stable horses were used.

The study materials included Horses, Sterile needled and syringe, Blood, Anti coagulant (Heparin), Sample bottles, Glass Slides, Microscope, Oil Immersion, Giemsa stain, staining rack

Sample Collection

Blood samples were collected from fifty horses through the external jugular vein into the heparinized sample bottle in Polo Club Ibadan. These samples were taken to the Veterinary teaching Hospital laboratory in University of Ibadan, Ibadan for laboratory analysis.

Characteristics of the Horses Used

The breeds of horses under this study were Argentinian, Sudanese and local horses. The age of the horses ranges from 24-80 months (age determination was by history) and were of different ages.

PROCEDURE FOR THE ANALYSIS

Blood smear was prepared for each blood sample in order to view babesia parasite under microscope. Thin blood was put on the slide each for all the samples, methanol was put on each slide and they were allowed to dry and the slides were placed in the staining rack and ten percent (10%) Giemsa stain was applied unto the slides on the rack and was left for forty five minutes to dry. The slides were removed from the staining rack and were viewed under the microscope using different magnifications i.e X30, X40 and oil immersion was needed for clearer view at high magnification.

Statistical Analysis

Descriptive statistics (categorical variable) using SPSS 17.0 package

RESULTS

Table1. Breed-wise Prevalence of Babesiosis among Horses in Ibadan at pre polo competition phase

Variable	No. Tested	No. Positive	Prevalence (%)
Local	39	7	14
Argentinian	8	0	0
Sudanese	3	0	0
Total	50	0	14

Table 1 showed the prevalence of babesiosis in horses used for polo games at the pre-exercise phase based on the breed classification. It revealed a low prevalence of 14% of all the horses sampled were local breed. This was in line with Ehizibolo *et. al.* 2012 who reported 8.6% prevalence of hemoparasites which included *Theileria equi*, *Babesia caballi*, *Trypanosoma vivax* and *Trypanosoma evansi* in the Northern states on Nigeria.

Table2. Breed-wise Prevalence of Babesiosis among Horses in Ibadan at post polo competition phase

Variable	No. Tested	No. Positive	Prevalence (%)
Local	39	11	22
Argentine	8	0	0
Sudanese	3	0	0

Table 2 showed the prevalence of babesiosis after exposure to polo games, which involved influx of horses from different parts of the country. The result after the game revealed increase in the prevalence from 14% to 22%. This could be due to invasion of the polo by ticks from the horses brought into the polo club for the competition.

Table3. Age-wise Prevalence of Babesiosis among Horses in Ibadan at Pre polo competition phase

Variable	No. Tested	No. Positive	Prevalence (%)
Age (Months)			
< 40	14	5	10
40-80	19	1	2
>80	17	1	2
Total	50	7	14

Table 3 revealed the prevalence of babesiosis based on the age category. It was found that horses less than 40 months had the highest prevalence 10% when compared to that of 40-80 months; 80 months and above which had 2% prevalence respectively at the pre polo competition phase. When compared with work of Muhanguzi *et. al.*, 2010, which revealed that prevalence of babesiosis was higher in young cattle (32.7%) compared to adult cattle (20%); and this corresponds to the finding in this study.

Table4. Age-wise Prevalence of Babesiosis among Horses in Ibadan at Post polo competition phase

Variable	No. Tested	No. Positive	Prevalence (%)
Age (Months)			
< 40	14	6	12
40-80	19	3	6
>80	17	2	4
Total	50	11	22

Table 4 showed the prevalence of babesiosis based on age category at post polo competition phase. It was found that there was increase in the entire age category following the game exposure, with the horses under 40 months having the highest prevalence.

Table5. Sex-Wise prevalence of Babesiosis among Horses in Ibadan at Pre polo competition phase

Variable	No. Tested	No. Positive	Prevalence (%)
Male	20	3	6
Female	30	4	8
Total	50	7	14

Prevalence of babesiosis based on sex of the horses at pre polo competition was presented in table 5. The result showed that there was higher prevalence in female horses (mares) than in male horses (stallions). This was in contrast with the work of Moneeb *et. al.*, 2013, that showed higher prevalence in stallions than in the mares.

Table6. Sex-Wise prevalence of Babesiosis among Horses in Ibadan at Post polo competition phase

Variable	No. Tested	No. Positive	Prevalence (%)
Male	20	5	10
Female	30	6	12
Total	50	11	22

Table 6 showed prevalence of babesiosis based on sex at post polo competition phase. It was found that a slight increase in the prevalence was seen, with the female still having her prevalence of 12%.

CONCLUSIONS

It was found from this study that the general prevalence of equine babesiosis was generally low at both pre and post competition phases. Also, the percentage of prevalence observed was higher in the local breed of the tested population and females between 40-80 Months of age which is their active age.

RECOMMENDATIONS

It is recommended that effective bio-security measures and grooming should be done to reduce parasitic infection and infestation in Horses especially of local breed, as they are more susceptible to the haemoparasitic infection (Babesiosis).

Also, it could be recommended from this study that horses that would participate in any polo game from other regions of the country be screened, as they can be sources of infestation to the resident horses where the game is being hosted.

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