

HAEMOPARASITES OF CATTLE IN ABEOKUTA, SOUTH WEST NIGERIA.

*AKANDE F. A., TAKEET M. I., MAKANJU O. A.

Department of Veterinary Microbiology and Parasitology,
 College of Veterinary Medicine, University of Agriculture,
 P.M.B 2240, Abeokuta. Ogun State. Nigeria.

*dayoakande2006@gmail.com

INTRODUCTION

The Nigerian Livestock Population was estimated at about 50 million apart from pigs, rabbits and guinea pigs (Bourn *et al.*, 1994). In monetary terms, the value of Nigeria livestock resources was conservatively estimated to be in the order of US\$ 6 billion. Of the Nigerian livestock population, cattle contributed about 10%, while in monetary terms, it accounted for about 40% of the total livestock revenue of Nigeria (McIntyre *et al.*, 1992).

Haemoparasites have generally been shown to cause destruction of red blood cells resulting in anaemia, jaundice, anorexia, weight loss and infertility. Parasitic diseases have debilitating impact on human and animal health worldwide particularly in developing countries (Ellis *et al.*, 2003).

Potential outbreaks of blood protozoan disease may occur if cattle are moved from humid area to the semi-arid region, or when cattle are transported from the semi arid regions to humid regions where the vectors are prevalent (Silvia *et al.*, 2005). Abeokuta falls within the humid part of the country where the conditions are suitable for the breeding of several vector species. This study was conducted to study the haemoparasites of cattle in Abeokuta, Southwest Nigeria with a view to providing basic information needed for their control.

Study area: Abeokuta, Ogun State in which the study was done is situated between Latitude 6.2°N and 7.8°N and Longitude 3.0°E and 5.0°E

Sample collection: 200 cattle of both sexes on intensive (free range) management were used for the study from nomadic herds between June and October 2009. About 5ml of blood were collected from each animal into ethylenediaminetetra acetic acid (EDTA) bottle and the samples were transported to the Veterinary Parasitology Laboratory of the College of Veterinary Medicine University of Agriculture, Abeokuta for haematological and parasitic analyses within one hour of collection. The packed cell volume (PCV) was determined by the haematocrit method (Schalm *et al.*, 1975). Thin blood smears were made and stained with Giemsa stain according to Jain (1986) and examined under the microscope at X100 magnification.

Data analysis: ANOVA was used for the data analysis. A p-value of less than 0.05 was considered significant.

The number of cattle sampled according to breed is as shown in Table 1. The result showed an overall infection rate of 51% due to various species of haemoparasites from 200 cattle sampled in 4 breeds. The study showed that the mean PCV values of infected cattle (27.11±6.90) was significantly lower (p<0.05) than non infected cattle (36.16±6.15).

TABLE 1. DISTRIBUTION OF CATTLE STUDIED IN RELATION TO BREED.

Breed	No Examined	%
White Fulani	150	75
Sokoto Gudali	15	7.5
Red Bororo	19	9.5
Muturu	1	0.5
Cross breed	15	7.5
Total	200	100

Fifty six (28%) of the cattle sampled were positive for single infection while forty six (23%) were positive for mixed infection (Table 2). The haemoparasites detected in the stained blood films of the animals were *Anaplasma* spp., *Babesia* spp., *Trypanosoma* spp. and *Theileria* spp. *Anaplasma* spp was the most prevalent single infection, while combined *Anaplasma* spp and *Babesia* spp were the most prevalent mixed infection (Tables 3 & 4).

TABLE 2. DISTRIBUTION AND TYPE OF HAEMOPARASITIC INFECTION IN RELATION TO SEX.

Sex	No Infected (%)	Single Infection (%)	Mixed Infection (%)
Male	86 (43)	46(23)	40(20)
Female	16(8)	10(5)	6(3)
Total	102(51)	56(28)	46(23)

TABLE 3. DISTRIBUTION AND TYPE OF HAEMOPARASITIC INFECTION IN RELATION TO BREED.

Breed	No Infected (%)	Single Infection (%)	Mixed Infection (%)
White Fulani	75(37.5)	42(21)	33(16.5)
Sokoto Gudali	10(5)	6(3)	4(2)
Red Bororo	11(5.5)	8(4)	3(1.5)
Cross Breed	6(3)	0(0)	6(3)
Total	102(51)	56(28)	46(23)

TABLE 4. HAEMOPARASITES DETECTED AND NUMBER OF CATTLE AFFECTED.

PARASITE	NO +ve (%)
<i>Anaplasma</i> spp	24 (12)
<i>Babesia</i> spp	17 (8.5)
<i>Trypanosoma</i> spp	12 (6.0)
<i>Anaplasma</i> spp and <i>Babesia</i> spp	20 (10.0)
<i>Anaplasma</i> spp and <i>Trypanosoma</i> spp	3 (1.5)
<i>Anaplasma</i> spp. and <i>Theileria</i> spp.	1 (0.5)
<i>Babesia</i> spp. and <i>Trypanosoma</i> spp.	10 (5.0)
<i>Trypanosoma</i> spp. and <i>Theileria</i> spp.	2 (1.0)
<i>Anaplasma</i> spp., <i>Babesia</i> spp. and <i>Trypanosoma</i> spp.	10 (5.0)
<i>Anaplasma</i> spp., <i>Babesia</i> spp. and <i>Theileria</i> spp.	3 (1.5)
TOTAL	102 (51.0)

In relation to breeds, single infection with *Anaplasma* spp was the most prevalent in the white Fulani breed of the cattle while mixed

infection with *Anaplasma spp* and *Trypanosoma spp* or *Anaplasma spp*, *Babesia spp.* and *Trypanosoma spp* was the most prevalent in the Sokoto Gudali breed. Furthermore single infection with either *Anaplasma spp* or *Babesia spp* was the most prevalent in Red

Bororo while mixed infection with *Anaplasma spp* and *Babesia spp* is the most prevalent in the Cross breed (Table 5). Muturu were not affected because of their hardy nature and trypanotolerance,

TABLE 5. DISTRIBUTION OF HAEMOPARASITE IN DIFFERENT BREEDS OF CATTLE IN LAFENWA, ABEOKUTA.

HAEMOPARASITE(S)	No Examined (%)				TOTAL
	White Fulani	Sokoto Gudali	Red Bororo	Cross Breed	
<i>Anaplasma spp.</i>	19 (12.7)	1 (6.7)	4 (21.1)	0 (0)	24 (12.0)
<i>Babesia spp.</i>	12 (8.0)	1 (6.7)	4 (21.1)	0 (0)	17 (8.5)
<i>Trypanosoma spp.</i>	10 (6.7)	1 (6.7)	0 (0)	1 (6.7)	12 (6.0)
<i>Anaplasma spp.</i> and <i>Babesia spp.</i>	15 (10.0)	1 (6.7)	1 (5.3)	3 (20.0)	20 (10.0)
<i>Anaplasma spp.</i> and <i>Trypanosoma spp.</i>	0 (0)	2 (13.3)	1 (5.3)	0 (0.0)	3 (1.5)
<i>Anaplasma spp.</i> and <i>Theileria spp.</i>	1 (0.7)	0 (0)	0 (0)	0 (0.0)	1 (0.5)
<i>Babesia spp.</i> and <i>Trypanosoma spp</i>	10 (6.7)	0 (0)	0 (0)	0 (0.0)	10 (5.0)
<i>Trypanosoma spp.</i> and <i>Theileria spp.</i>	1 (0.7)	0 (0)	0 (0)	1 (6.7)	2 (1.0)
<i>Anaplasma spp.</i> , <i>Babesia spp.</i> & <i>Trypanosoma spp.</i>	7 (4.7)	2 (13.3)	0 (0)	1 (6.7)	10 (5.0)
<i>Anaplasma spp.</i> , <i>Babesia spp.</i> & <i>Theileria spp.</i>	0 (0)	1 (6.7)	1 (5.3)	1 (6.7)	3 (1.5)

This study revealed an overall haemoparasite infection rate of 51% in cattle in Abeokuta, Nigeria. Farmers may not appreciate the effects of these haemoparasites on their animals, perhaps due to their subclinical nature of presentation or due to their chronic nature on the affected animals, leading to reduction in production and eventual death of the affected animals. It is noteworthy that most of the cattle studied were bought from the Northern part of the country.

The high prevalence of haemoparasites observed in this study is similar to the work of Oduye & Dipeolu (1976) that reported a prevalence of about 50% infections in 800 dogs sampled in Ibadan, Nigeria. It also agreed with the result of Dipeolu *et al.*, (1982) who observed 81% prevalence of haemoparasitic infections in local pigs at Ibadan, Nigeria. Other similar findings include 50.2% prevalence of blood protozoan (Talabi *et al.*, 2009) in the Trans boundary areas of Ogun State, Nigeria and 54% prevalence in sheep at Abeokuta, Ogun State (Takeet *et al.*, 2009). The high incidence of haemoparasites recorded could be as a result of favorable environmental condition that helps in the survival and proliferation of the arthropod vectors responsible for the transmission of these parasites (Adejinmi *et al.*, 2004)

Anaemia was the major clinical sign in the affected animals, agreeing with Adejinmi *et al.*, (2004) who reported anaemia as a reliable indicator for the severity of haemoparasitic infections. The results from the study also suggest that haemoparasitic infection may be the cause of anaemia seen in cattle reared extensively in Nigeria. Thus livestock farmers are advised to adopt the option of routine check up for their animals especially for haemoparasites to avoid problems.

REFERENCES

Adejinmi, J. O., Sadiq, N. A., Fashanu, S. O., Lasisi, O. T. & Ekundayo, S. (2004). Study on the blood parasite of sheep in Ibadan, Nigeria. *Africa Journal of Biomedical Research*, 7:42-43.

Bourn, D., Wint, W., Blench, R., Woolley, E. (1994). Nigerian Livestock resources survey. *World Animal Review*. 78 (1):49-58.

Dipeolu, O. O., Majaro, O. M. & Akinboade, O. A (1982). Studies on blood parasite of pigs in Ibadan, Nigeria. *Veterinary Parasitology* 10: 87-90.

Dolan, T. T. (1989). Theileriosis: A comprehensive review. Review of Science technics office of international epizootics 8, 11-36.

Ellis, J. T., Morrison, D. A., Reichel, M. P., (2003). Genomics and its impact on parasitology and the potential for development of new parasite control methods. *DNA and Cell Biology* 32:395-403.

Ezeani, M. C., Okoro, H., Anosa, V. O. (2008). Immunodiagnosis of bovine trypanosomosis in Anambra and Imo States Nigeria, using enzyme-linked immunosorbent assay: Zoonotic implications to human health. *Journal of Vector Borne Diseases* 45: 292-300.

FAO (1992). The influence of trypanosomosis on African animal production. *Animal zootechnica* pp: 1-2.

Jain, W. C (1986). *Schalms Veterinary Haematology* 4th Edition. Lea & Febiger, Philadelphia, London.

Khan, M. Q., Zahoor, A., Jahangir, M. Mirza, M. A. (2004). Prevalence of blood parasites in cattle and buffaloes. *Pakistan Veterinary Journal* 24 (4):193-195

Khan, C. M., Line, S. (2006). *The Merck veterinary manual*. Whitehouse Station, NJ: Merck and Co.

Kessler, R. H., Schenk, M. A. (1998). Tristeza parasiteria dos bovinos (TPB): conceito, etiologia, transmissao, epidemiologia, diagnostico e controle. In R.H.Kessler, M.A.Schenk (eds), Carrapato, Tristeza parasitanas Tripanosomose des bovinos, Embrapa, Campo Grande, 48 – 67.

Luther, G. D., Hart, L. T., Todd, W. J. (1996). Anaplasmosis treatment and control. Proceedings of the North Atlantic Veterinary Conference (TNVAC).

McIntyre, J. D., Bourzat, D., Pingal, P. (1992). Crop-livestock interaction in sub-Saharan African. Regional World Bank, Washington, D. C

Oduye, O. O. & Dipeolu, O. O. (1976). Blood parasites of dogs in Ibadan, Nigeria. *Journal of Small Animal Practice* 17:331-337.

Oluwafemi R. A., Ilemobade, A.A., Laseinde, E.A.O. (2007). The impact of African animal trypanosomosis and tsetse on the livelihood and well-being of cattle and their owners in the BICOT study area of Nigeria. *Scientific Research & Essay* 2 (9): 380-383

PATTEC (2000). Pan African Tsetse and trypanosomosis Eradication campaign (PATTEC). A continental plan of Tsetse and trypanosomosis. The OAU pathway for the PATTEC initiative 7 – 16 December, 2000.

Roder, P. L., Scott, J. M., Pegram, R. G. (1984). Acute *Trypanosoma vivax* infection of Ethiopian cattle in the apparent absence of tsetse. *Tropical Animal Health Production* 6:141-147.

Schalm, O. W., N. C., Carrol, E. J. (1975). *Veterinary Haematology*, 3rd Edition. Lea and Febiger, Philadelphia, 15-81

Silvia, L. B., Claudio, R. M., Flabio, R. A., Carlos, F. M., Maria, A. A., Elaine, P. S. M., Raul, H. K. (2005). Serological survey of *Babesia bovis*, *Babesia bigemina* and *Anaplasma marginale* antibodies in cattle from the semi-arid region of the state of Bahia, Brazil, by enzyme linked immunosorbent assays. *Memoria do Instituto Oswaldo Cruz Rio de Janeiro* 100(6): 613-61

Soulsby, E. L. B. (1982). *Helminths, Arthropods and Protozoan of Domestic Animals*. 7th Edition Bailliere Tindall, London, 516-538