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Prevalence of Haemoparasites in Livestock in Ikwuano Local Government Area of Abia State

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Abstract

The paucity of information on the prevalence of haemoparasites in livestock in Ikwuano L.G.A. of Abia state, the seat of the University of Agriculture Umudike necessitated the study. Out of 639 samples analyzed 141 were males and 498 females and out of these 243(38.0%) were positive for haemoparasites. The prevalence was higher in females 199(40.0%) compared to males 44(31.2%). Goats/sheep had the highest prevalence in *Babesia* 214 (88.1%); *Anaplasma* 76 (31.3%) and Trypanosomes 18 (7.4%). Prevalence in cattle was *Babesia* 209 (86.0%); *Anaplasma* 75 (31.0%) and Trypanosomes 0 (0.0%). Zero prevalence was recorded in pigs. The highest prevalence was recorded in the month of November 108(64.0%) and December 42 (65.0%) and. Others were March 55 (44.0%); April 20 (35.1%), May 5 (14.3%), June 7 (14.3%), July 3 (5.0%) and August 3 (4.0%). There were significant decreases (P>0.05) in pack cell volume and hemoglobin concentration of all the infected animals compared to the control.

Keywords: Prevalence; Haemoparasites; Cattle; Goats; Sheep; Trypanosomes; *Babesia; Anaplasma*; Ikwuano

Introduction

Trypanosomosis, babesiosis and anaplasmosis are important haemoparasites that militates livestock production in tropical countries Lako [1]. Particularly, trypanosomosis have remained a major concern in Livestock production in Nigeria despite several therapeutic and control attempts [2-4]. Prevalence rate of the disease in livestock are variable depending on the distribution of the vector (Tse tse fly) in endemic areas. The infection rate could be over 60% in cattle. Other reporters estimated the incidence of trypanosomosis in western Nigeria at about 0.2% in Ibadan, Oduye [5] and 0.12% in Lagos. The prevalence in the East, especially in Nsukka area of Enugu fluctuates between 15.5%, Adewunmi [6] to 6.8% Omamegbe [7] and up to 19.5% Omamegbe [8]. Haemoparasitaemic animals are anaemic, emaciated with poor performances and decrease in milk and meat production [9,10]. Little info available on incidences of haemoparasites in livestock in Ikwuano L.G.A. of Abia State necessitated this research in order to enforce preventive/control measures.

Materials and Methods

In this study, communities were randomly selected and sampled form the 5 clans of Ikwuano L. G. A. of Abia state. The clans are comprised of, Oboro with 18, Ibere 7, Oloko 8, Ariam 6 and Usaka 3 communities. A total of 14 communities were randomly sampled in the study, and they include 6 communities in Oboro, 2 in Ibere, 3 in Oloko, 2 in Ariam and 1 in Usaka. In the selected communities cattle, sheep, goats and pigs were randomly sampled. One mililiter of blood sample was collected through the jugular veins of the animals into a well labeled EDTA bottle according to Jamie [11] and kept in an iced packed cooler before transportation to the laboratory for analysis. Sampling in each selected community was done twice a week and the results obtained from the communities were summed to obtain prevalence of each of the parasites in the LGA. The study commenced in March and ended in December 2012. The analysis was done using thin blood technique stained with Geimsa for both *Babesia* sp. and *Anaplasma* sp. Trypanosomes were detected using both Wet mount and Buffy coat techniques for accuracy. The Packed cell volume (PCV) and hemoglobin concentrations of the animals were determined according to the method of Woo [12]. The number of samples collected was determined using the expression as described by Mahajan [13]. $N= Z^2PQ/d^2$. N= no of samples to collect, Z= A constant degree of freedom, P= Percentage of published prevalence, Q= (1-P), D = Confidence interval designated as 0.05.

Statistical Analysis

The results obtained were analyzed using descriptive statistics Swai [14] and presented as Tables 1-3. The prevalence (P) of the diseases were calculated using the formula P=d/n. where N= positive cases/ Total number of samples examined Thrusfeild [15]. The prevalence of the diseases was expressed in percentage. The PCV and HBC were analyzed using ANOVA and the means separated with Duncan's multiple range tests.

Result

In Table 1, out of the 639 samples analyzed, a total of 243 (38.0%) samples were positive for haemoparasites. Out of the ruminants sheep/goats had the highest prevalence of *Babesia* sp. 214(88.1%); *Anaplasma* 76 (31.3%) and Trypanosomes 18(7.4%). The prevalence in cattle was *Babesia* 214(88.1%); *Anaplasma* 76(31.3%) and zero prevalence of Trypanosomes. There was no prevalence recorded in any of the haemoparasites in pigs. Greater number of the infected animals had mixed infections of *Babesia* and *Anaplasma* sp. Amongst the different locations sampled; Usaka had the highest prevalence 16(89.0%). Next

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Location	Total no	Total	Total	Total No of AP	Breed Distribution									Total
					Cattle			Sheep/goat			Pigs			
					TP	Bb	AP	TP	Bb	AP	TP	Bb	AP	
MOUAU COM.	50	0	10	3	-	5	1	-	5*	2*	-	-	-	11(22.0%)
OBORO CLAN	370	18	99*	30	-	-	-	18	99*	30*	-	-	-	117(28.0%)
IBERE CLAN	68	0	40*	10	-	-	-	-	40*	10*	-	-	-	40(59.0%)
OLOKO CLAN	84	0	45*	23	-	-	-	-	45*	23*	-	-	-	45(54.0%)
ARIAM CLAN	49	0	14*	-	-	-	-	-	14	-	-	-	-	14(29.0%)
USAKA CLAN	18	0	6	10	-	-	-	-	6	10	-	-	-	16(89.0%)
Total	639	18 (7.4%)	214 (88.1%)	76 (31.3%)	-	5 (2.1%)	1							
(0.4%)	18 (7.4%)	209 (86%)	75 (31%)	-	-	-	243(38.0%)							

Table 1: Prevalence of haemoparasites in Livestock in Ikwuano L.G.A. of Abia state, Nigeria.

Months	Number examined	Total Prevalence (%) of positive cases	Number of Males	Prevalence (%) of positive cases	Number of Females	Prevalence (%) of positive cases
March	125	55(44.0%)	8	2 (25.0%)	117	53 (45.3%)
April	57	20 (35.1%)	10	3 (30.0%)	47	17 (36.2%)
May	35	5 (14.3%)	9	4 (44.4%)	26	1(4.0%)
June	49	7 (14.3%)	7	0 (0.0%)	42	7(17.0%)
July	63	3 (5.0%)	6	0 (0.0%)	57	3(5.2%)
August	75	3 (4.0%)	35	1 (3.0%)	40	2(5.0%)
Sept-Oct	Nil	Nil	Nil	Nil	Nil	Nil
November	170	108(64.0%)	60	30(50.0%)	110	78 (71.0%)
December	65	42 (65.0%)	6	4(67.0%)	59	38(64.4%)
Total	639	243(38.0%)	141	44(31.2%)	498	199 (40.0%)

Table 2: Month and sex prevalence of Haemoparasites in Livestock in Ikwuano L.G.A. of Abia state, Nigeria.

Species of Animal/ parasite type	Pack cell volume (%)		Hemoglobin conc. (g/dl)	
Goats/Sheep	Non-Infected	infected	Non-Infected	infected
Trypanosomes	28.12 ± 5.1^a	17.39 ± 2.2^b	12.39 ± 5.1^a	7.39 ± 2.3^b
Babesiosis	28.12 ± 5.1^a	18.30 ± 4.1^b	12.39 ± 5.1^a	7.20 ± 5.6^b
(Mix infection)	28.12 ± 5.1^a	15.39 ± 5.2^b	12.30 ± 5.1^a	5.15 ± 3.4^b
Cattle (Mix infection)	39.20 ± 3.25^a	28.10 ± 3.32^b	13.39 ± 5.1^a	7.15 ± 3.4^b

Table 3: Influence of Babesiosis and Anaplasmosis on Pack cell volume and Haemoglobin concentration of Livestock in Ikwuano L.G.A. of Abia state.

were Ibere 40 (59.0%); Oloko 45 (54.0%); Ariam 14 (29.0%); Oboro 117 (28.0%) and the least in MOUAU community 11 (22.0%). In Table 2, the highest prevalence was recorded in December 42(65.0%); this was followed by the month of November 108 (64.0%) and March 55 (44.0%). The rest include: April 20 (35.0%); May 5 (14.3%); June 7 (14.3%); July 3 (5.0%) and the least in August 3(4.0%). Out of a total of 639 animals sampled, 141 were males and 498 were females. The prevalence of haemoparasites was higher in females 44 (31.2%) when compared to males 199 (40.0%). There were significant decreases in the PCV and hemoglobin concentration of animals infected with haemoparasites when compared to the control. Those with mixed infections of *Babesia* and *Anaplasma* species had lower PCV and HBC.

Discussion

Haemoparasitic infection in livestock production are essentially an important disease conditions which causes anemia, debilitating conditions and even immunosuppression predisposing infected animal to opportunistic infection as is the case in Trypanosomes. There was relatively high prevalence of haemoparasites especially *Babesia* and *Anaplasma* species in Ikwuano L.G.A. This reflects the state of husbandry practices and near absence of provision of veterinary health services in livestock production in these areas. Apart from problem of unavailability of government established veterinary clinics in most communities, most farmers are ignorant of the need of veterinary health management for their livestock and as such loss high yielding animals to diseases which have a cumulative detrimental effect to the economy of the nation. Most of the livestock had mixed infections of *Babesia* and *Anaplasma* species. This corroborates the findings of [1]. Low prevalence of *Trypanosomes* could signify absence of *Glossina* sp. and incidental transportation of infected animals from endemic areas. The second option stemmed from the existence of popular market in the community patronized by surrounding cities providing routes of introduction of infectious agents and diseases to the communities. This reflects the high prevalence of haemoparasites recorded in Oboro clan the community with the popular market.

High prevalence of haemoparasites recorded in March, November and December agrees with the findings of Obeta [16] who detected highest prevalence of haemoparasites in December. This could be attributed to the weather condition when there was no rain and often very conducive for the spread of diseases. However, this was in contrast with the findings of [4] who observed high prevalence of haemoparasites during rainy season. The relatively low prevalence of haemoparasites in the months of April, June, July and August could be attributed to the rainy weather conditions apparently not suitable for the development and transmission of vector borne diseases. The seeming high prevalence of haemoparasites in females than in the Males could be related to the proportion of the populations sampled. This corroborates the findings of [4]. Most of these farmers keep large number of females than males especially for breeding purposes which affected the proportion of the sex infected.

The significant decreases in the PCV and the HBC of infected animals' highlights the importance of haemoparasites in Animal production and the relevance of proper surveillance programmes to enforce early control measures.

In conclusion, there should be provision of government established veterinary clinics in communities along side human health centers to ensure animal health and only then can we guarantee good public health.

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