



Original article

Prevalence of haemoparasites in red sokoto goats slaughtered at Ahiaeke Market, Umuahia, Abia State, Nigeria

C.S. Ukwueze^{a,*}, E. Kalu^b

^a*Department of Veterinary Medicine, Umudike, Abia State.*

^b*Department of Veterinary Public Health and Preventive Medicine, Michael Okpara University of Agriculture, Umudike, Abia State.*

*Corresponding author; Department of Veterinary Medicine, Umudike. Abia State.

ARTICLE INFO

Article history,

Received 03 January 2015

Accepted 20 January 2015

Available online 29 January 2015

Keywords,

Prevalence

Haemoparasites

Red sokoto

Ahiaeke

Slaughtered

ABSTRACT

The prevalence of haemoparasites in Red Sokoto goats slaughtered at Ahiaeke market, Umuahia, Abia State Nigeria were determined between the months of September and November 2014. Blood samples were collected from 125 apparently healthy goats using standard laboratory techniques. The blood samples were examined for haemoparasites using wet mount, buffy coat and thin smear stained with geimsa. The overall prevalence of haemoparasite infection was 57.6% (72) of all the samples examined. Babesiosis and Anaplasmosis showed a higher prevalence of 29.6% (37) and 16.8% (12) respectively. Trypanosomosis had the lowest prevalence of 1.6% (2) and Mix infection with a prevalence of 9.6% (12). The rate of infection was higher in the females than in males. The non-infected group had a significantly higher ($P < 0.05$) mean packed cell volume when compared with the groups infected with Trypanosomosis, Babesiosis, Anaplasmosis and Mix infection. The result of this study indicates a high prevalence of haemoparasite infection in Red Sokoto goats slaughtered in the area of study, therefore strategic measures should be taken to control the vectors involved in their transmission.

© 2015 Sjournals. All rights reserved.

1. Introduction

The population of goats in Nigeria is about 26 million, with an estimate of about 6.6 million located in the southern part of Nigeria and 20 million in the northern part. Most of the breeds of goats in Nigeria are largely indigenous; and the common ones include the West African Dwarf (WAD) goat, Sahel/desert goat- known as West African Long-Legged goat; and Sokoto Red/Maradi (Ademosun, 1987; Bourn et al., 1986; Fabusoro et al., 2007). According to FAO in 2001, the West African Dwarf (WAD) goats are more predominant in the south while the Sokoto red is more largely found in the north.

Goats are a major source of investment to most families in Nigeria, mainly for provision of protein and income (Anyaeunam and Okafor 2013). The demand for goats in the southern part of Nigeria is quite high due to its use for ceremonies such as marriages, burials, child dedication and other festivals. This demand has in turn created good employment opportunities and generates income for animal owners/farmers, butchers, foragers and government.

The effect of parasitism in livestock is determined by the interactions between the type of parasites present in your geographic area, parasite life cycles, the environment including weather patterns and type of farm management, and the host factors (Mary, 2004). Haemoparasities especially Trypanosomosis, Babesiosis and Anaplasmosis are of major impediments to livestock production in tropical countries (Lako et al., 2007). In Nigeria, animal trypanosomosis constitutes a major obstacle to food security, in spite of attempts towards chemotherapeutic and tsetse control. The disease, not only causes millions of livestock deaths, but also reduces calving rates, milk yield and work efficiency of draft animals (Luckins, 1992). Tick-borne diseases cause substantial losses to the livestock industry throughout the world (Ananda et al., 2009; Kakarsulemankhel, 2011) as these have got a serious economic impact due to obvious reason of death, decreased productivity, lowered working efficiency (Uilenberg, 1995), increased cost for control measures (Makala et al., 2003) and limited introduction of genetically improved animal in an area (Radostits et al., 2000).

Among the livestock slaughtered at Ahiaeke market, Red Sokoto goats are predominant and there is no available information on the prevalence of haemoparasite infection in these animals. Thus this work aims at establishing the prevalence of haemoparasites in Red Sokoto goats slaughtered at Ahiaeke market, Umuahia, Abia state.

2. Material and methods

Study area

The study was conducted in Ahiaeke market, Umuahia, Abia State, and South-Eastern Nigeria. Abia State is located on latitude 4-6°N, longitude 7-8°E and altitude 244-305 m (highest point) above sea level. Mean annual rainfall is 187.7 mm.

Study population

The study was carried out on 125 adult Red Sokoto goats of different sexes that were acquired from Northern Nigeria to be slaughtered at the Ahiaeke goat market. The study was done between September and November 2014.

Sample collection

2mls of blood was collected from the jugular vein of the animals into EDTA bottle prior to slaughter. The blood samples were then screened for trypanosomes using standard techniques; wet mount and buffy coat method. Babesia and Anaplasma species were screened using thin smear stained with Geimsa. Haematological analysis was based on packed cell volume (PCV) using micro-haematocrit method.

Data analysis

The data obtained was subjected to several descriptive statistics and the prevalence was expressed in percentage. PCV was also analyzed using ANOVA and Duncan's multiple range test with SPSS version 18 software package. P values < 0.05 were considered significant.

Description of the study area

The study was conducted from November, 2012 to May, 2013 at Debre Markos Municipal Abattoir. Debre Markos is the capital of East Gojjam Administration Zone in the Amhara National Regional State (ANRS). It is located in the north west of the capital city of Ethiopia, Addis Ababa at a distance of 300Km and 265Km to the capital of Amhara National Regional State, Bahir Dar. Debre Markos is located at 10021' longitude to the North and 37043' latitude to the East. The core city has an estimated area of 6,160 hectares. According to Meteorological Agency, Debre Markos has a mean annual rainfall of about 1380mm and mean annual temperature of 18.50C. (Ayen Mulu, 2004).

3. Results

The overall prevalence of haemoparasite infection was 57.6% (72) of all the samples analyzed as presented in Table 1. Babesiosis had the highest prevalence of 29.6% (37) and Anaplasmosis with a prevalence of 16.8% (12). Trypanosomosis had the lowest prevalence of 1.6% (2) and Mix infection with a prevalence of 9.6% (12). The prevalence of infection according to sex is presented in Table 2. The infection rate was higher in the females than in males. The result of the mean packed cell volume is presented in presented in Table 3. The non-infected group had a significantly higher ($P<0.05$) mean packed cell volume when compared with the groups infected with Trypanosomosis, Babesiosis, Anaplasmosis and Mix infection.

Table 1

Distribution of haemoparasites in Red Sokoto goats slaughtered at Ahiaeke market.

Haemoparasites	Trypanosome s	Babesia	Anaplasma a	Mix Infection	Total
Number Infected	2	37	21	12	72
% Infection	1.6	29.6	16.8	9.6	57.6

Table 2

The relationship between sex and haemoparasite of the goats sampled

Sex	Number examined	Trypanosomes	Babesia	Anaplasma	Mix Infection
Male	26	0(0%)	6(23.1%)	3(12%)	0(0%)
Female	99	2(2%)	31(31.3%)	18(18.2%)	12(12.1%)

Table 3

The mean packed cell volume of haemoparasite non-infected and infected Red Sokoto goats slaughtered at Ahiaeke market.

Non infected	Infected			
	Trypanosomes	Babesia	Anaplasma	Mix infection
34.21±2.67	20.05±2.34	20.58±2.69	19.25±3.19	23.05±1.69

4. Discussion

Haemoparasitism remains a major threat to livestock industry in tropical and sub-tropical countries especially in cattle and small ruminant (Rajput et al., 2008; Ademola and Onyiche 2013). Among the haemoparasites observed in this study, Babesia and Anaplasma had the highest prevalence of 28.8% and 16.8% respectively. This result agrees with the finding of Takeet et al. (2009) who observed a similar result in small ruminant in Abeokuta Nigeria. A relatively high incidence of these haemoparasite could be attributed to the favourable environmental conditions for the survival and transmission dynamics of the arthropod vectors. The low prevalence of trypanosomes (1.6%) found in this study agrees with the findings Ohaeri (2010), who found a similar prevalence of

(1.2%) in small ruminant in Abia State, but contradicts Anyaebunam and Okafor (2013) who found a higher prevalence of 14.1% in goats slaughtered in Ikpa, Abattoir Nsukka, Enugu State. The low prevalence recorded could also be attributed to lower vector abundance with low infection rates in the zone as reported by Ohaeri (2005), and Ohaeri and Eluwa (2007) and small ruminants are not natural hosts for the mechanically transmitted *Trypanosoma evansi*.

The sex infection rates was found to be more in the females than in the males and this could be attributed to larger number of females sampled and relatively higher number of female kept by the owners for breeding purpose (Samdi et al., 2008). This result is also supported by the work of (Abenga, et al., 2008), who discovered a prevalence of 2.27% rate in females as against 1.60% in males. The observed anaemia, characterized by low mean PCV values of all the categories of the infected animals suggests that the parasitic infection may be the cause of the anaemia. Similar observation has been made by Okaiyeto et al. (2008). The effects of the blood sucking activities and the haemolytic activities of the haemoparasites might be the cause of anaemia in the infected animals.

The result of this study clearly indicates the presence of haemoparasite infection in red Sokoto goats kept by the animal owners in the area of study. Their owners may not have noticed the effects of the parasites on the animals because of the subclinical or chronic nature of the infection, which often do not result in mortality. However, their effects is usually manifested in production losses in the form of diminution of productive potential such as decreased growth rate in lambs and kids, late maturity, weight loss, and increased susceptibility to other diseases.

There is therefore, need for prevention and control programs against these parasites of sheep and goats in endemic areas. This when carried out will improve the production potentials of these animals and the economic well-being of the owners.

References

- Abenga, J.N., Fajinmi, A., Idowu, T., Kalgo, A., Lawani, F., Samdi, S., 2008. Seasonal variation of Trypanosomosis rates in small ruminants at Kaduna abattoir, Nigeria. *African J. Biomed. Res.*, 11(2), 229 -232.
- Ademola, I.O., Onyiche, T.E., 2013. Haemoparasites and Haematological parameters of slaughtered Ruminants and pigs at Bodija Abattoir, Ibadan, Nigeria. *African j. biomed. res.*, Vol. 16, 101-105.
- Ademosun, A.A., 1987. Appropriate management systems for West African Dwarf goats in humid tropics. In O. B. Smith & and Bosman, H. G. (Eds). *Goat production in the tropics. Workshop proceeding.* Obafemi Awolowo University, Ife.
- Ananda, K.J., Placid, E., Puttalakshamma, G.C., 2009. Prevalence of hemoprotozoan diseases in crossbred cattle in Bangalore north. *Vet. World.*, 12, 15-16.
- Anyaebunam, L.C., Okafor, O.J., 2013. Trypanosomosis in Red Sokoto and West African Dwarf goats at Ikpa Abattoir, Enugu State, Nigeria. *J. Entomol. Zool. Stud.*, 1 (5), 35-37.
- Bourn, D., Milligan, K., Wint, W., 1986. Tsetse, trypanosomiasis and cattle in a changing environment. In R. von Kaufmann, Chater, S. & Blench, R. (Eds). *Proceedings of ILCA/NAPRI Symposium, Kaduna, Nigerian.* Retrieved February 2, 2012 from <http://www.fao.org/Wairdocs/ILRI/x5463E/x5463e0b.htm#paper5>.
- Fabusoro, E., Lawal-Adebawale, O.A., Akinloye, A.K., 2007. A study of rural livestock farmers' patronage of veterinary services for health care of small farm animals in Ogun State. *Niger. J. Anim. Product.*, 34 (1), 132 – 138.
- FAO., 2001. Pastoralism in the new millennium. Animal production and health, paper150. Food and Agriculture Organisation, Rome. Retrieved December 10, 2011 from <http://www.fao.org/DOCREP/005/Y2647E/y2647e00.htm>.
- Kakarsulemankhel, J.K., 2011. Re-description of existing and description of new record of tick [*Hyalomma* (*Euhyalomma*) *schulzei*] from Pakistan. *Int. J. Agric. Biol.*, 13, 689–694.
- Lako, N.J., Tchoumboue, J., Payne, V.K., Njiokou, F., Abdoulmoumini, M., et al., 2007. Prevalence of Trypanosomosis and babesiosis among domestic ruminants in the western Highlands of Cameroon: Proceedings of the 12th International conference of the Association of Institutions of Tropical Veterinary Medicine, Montpellier, France.
- Luckins, A.G., 1992. Trypanosomiasis in small ruminants a major constraint to livestock production. *British Veter. J.*, 1, 48,171 – 173.

- Makala, L.H., Mangani, P., Fujisaki, K., Nagasawa, H., 2003. The current status of major tick borne diseases in Zambia. *Vet. Res.*, 34, 27-45.
- Mary, C.S., 2004. *Goat Parasites: Management and Control*. Revised September 2004.
- Ohaeri, C.C., 2010. Prevalence of Trypanosomosis in Ruminants in parts of Abia State, Nigeria. *J. Anim. Veter. Adv.*, 9(18), 2422-2426.
- Ohaeri, C.C., 2005. Prevalence of Trypanosomosis in ruminants in parts of Abia State, Nigeria. *J. Anim. Veter. Adv.*, 2005, 9(18), 2422 – 2426.
- Ohaeri, C.C., Eluwa, M.C., 2007. The population structure and physiological status of tsetse flies in Abia State, Nigeria. *J. Anim. Veter. Adv.*, 6, 513-516.
- Okaiyeto, S.O., Tekdek, L.B., Sackey, A.K.B., Ajanusi, O.J., 2008. Prevalence of haemo and gastrointestinal parasites in sheep and goats kept by the Normadic Fulanis in some Northern states of Nigeria. *Res. J. Anim. Sci.*, 2(2), 31-33.
- Radostits, O.M., Blood, D.C., Gay, C.C., 2000. *Veterinary Medicine: A text book of disease of cattle, sheep, pigs, goats and horse*. 9th Ed, Baillere Tindall Publication, London, pp: 1172-1173, 1289-1290.
- Rajput, Z.I., Song-hua, H.U., Arijo, A.G., Habib, H., Khalid, K., 2005. Comparative study of Anaplasma parasites in tick carrying buffaloes and cattle. *J. Zhejiang Univ. Sci.*, 6B, 1057-1062.
- Samdi, S., Abenga, J.N., Fajinmi, A., Kalgo, A., Idowu, T., et al., 2008. Seasonal Variation in Trypanosomosis Rates in Small Ruminants at the Kaduna Abattoir, Nigeria. *Afr. J. Biomed Res.*, 11, 229-232.
- Takeet, M.I., Akande, F.A., Abakpa, S.A.V., 2009. Haemoparazoan parasites of sheep in Abeokuta Nigeria. *Niger. J. Parasitol.*, 30(20), 142-146.
- Uilenberg, G., 1995. International collaborative research: significance of tick-borne hemoparasitic diseases to world animal health. *Vet. Parasitol.*, 57, 19-41.