

Short communication

STUDIES ON THE BLOOD PARASITES OF SHEEP IN IBADAN, NIGERIA

ADEJINMI, J O¹, SADIQ, N A¹, FASHANU, S O¹, LASISI, O T² AND EKUNDAYO S¹

¹Department of Veterinary Microbiology and Parasitology, University of Ibadan.

²Department of Veterinary Medicine, University of Ibadan.

A total of two hundred and fourteen blood samples collected from West African Dwarf (WAD) Sheep between the months of January and April 2001 were examined for haemoparasites using the blood smear method. The rectal temperature, Packed Cell volume (PCV), Haemoglobin concentration (Hb), Red Blood Cell (RBC) and white blood cell (WBC) counts of the sheep were determined. The Parasites found were *Anaplasma*, *Babesia* and *Eperythrozoon* species. Mixed infections with these parasites were common. *Anaplasma* sp was the most predominant in WAD sheep carrying single infection. Mixed infections with *Anaplasma* and *Eperythrozoon* (AE) species. *Anaplasma*, *Babesia* and *Eperythrozoon* (ABE) species were the most common. The mean temperature of sheep carrying mixed infections was higher than those carrying single infection. Similarly the mean PCV, Hb, RBC and WBC of Sheep carrying mixed infections were lower than the sheep carrying single infection. The significance of these to sheep production is discussed.

Key words:- Haemoparasites; *Anaplasma* sp, *Babesia* sp, *Eperythrozoon* sp, Sheep, Ibadan

INTRODUCTION

West African dwarf (WAD) Sheep are small ruminants which are ubiquitous in villages throughout the Nigerian rain forest and the derived savannah (ILCA, 1987). These animals have great economic potential because of their high fertility and early maturity as well as their adaptability to humid environment (Ademosun, 1988). However, the benefits derived from these animals are far below the expected due mainly to low productivity. This low productivity is due to numerous factors of which the major one is disease (Akerejola *et al.*, 1979). For example mortality rates of 34.12% and 36.20% have been reported respectively for sheep and goats in the old Bendel State (ILCA, 1987). Most apparent are diseases caused by blood parasites.

Blood parasites are parasites found in the blood of mammals. Such parasites include *Anaplasma*, *Babesia*, *Eperythrozoon*, *Cowdria*, and *Trypanosoma* species. Their effects on the susceptible hosts vary from reduced productivity to death (Urquhart *et al.* 1988). Rue Jense (1974) in his study of haemoparasites of sheep found *Anaplasma*, *Babesia* and *Eperythrozoon* species in the blood of local and exotic sheep. Nicholls and Veale (1986) in a two year study of 22 shires in Australia reported *Eperythrozoon* infection in 10% and 51% of weaner and adult sheep respectively. Dipeolu *et al* (1982) also reported *Babesia* and *Eperythrozoon* species as blood parasites of local and exotic pigs in Ibadan.

These authors observed mixed infections with these parasites in most of the pigs examined. This study was carried out to investigate the blood parasites of sheep in Ibadan. The results will add to the existing, scanty information on the subject and assist in the treatment and control of sheep diseases.

MATERIALS AND METHODS

The WAD Sheep used for this study were those brought to the Sheep markets at Bodija, and Bere and some households in Ibadan. The study was carried out between the months of January and April 2001. The rectal temperature of the animals was taken using the clinical thermometer.

Blood samples were collected from the jugular veins of each Sheep with a sterile hypodermic Needle and syringe. About 2ml of blood was collected from each animal into bottles containing ethylenediamine tetra-acetic acid (EDTA) as the anticoagulant. Two thin smears were made from each sample following the standard staining procedures described by Adam *et al.*, (1977). The PCV, Hb, RBC and WBC were determined using the standard methods described by Schalm *et al.*, (1975). The MCV, MCH and MCHC were calculated from PCV, Hb and RBC.

Data obtained were subjected to 2-way ANOVA (SAS, 1987) and Duncan Multiple Range

Test Duncan (1955). Tests were carried out at 95% level of confidence (P < 0.05).

RESULTS

Most of the sheep from which blood samples collected were stunted and had pale mucous membrane suggestive of anemic condition. Table 1 shows the mean temperature and hematological values of WAD sheep carrying single and mixed infections. 24 (11.2%) sheep were positive for *Anaplasma spp* and the mean temperature, PCV, Hb, RBC and WBC were 37.7 ± 4.44°C, 26.0 ± 1.41%, 9.53 ± 2.10gm/dl, 4.81 ± 2.10 x 10¹²/L and 44.24 ± 2.20 x 10⁹/L respectively. 4(1.9%) sheep were positive for *Babesia spp* while 12(5.6%) were positive for *Eperythrozoon ovis*. 24(11.2%) Sheep were positive for *Anaplasma*, *Babesia* and *Eperythrozoon* species (ABE) while 26 (12.2%), 16 (7.5%) and 2 (0.9%) sheep were positive for *Anaplasma* and *Eperythrozoon* (AE), *Anaplasma* and *Babesia* (AB) and *Babesia* and *Eperythrozoon* (BE) species respectively.

The mean temperature of Sheep carrying mixed infections though not significant (P > 0.05) were higher than those with single infection. Also the mean PCV, Hb, RBC and WBC of Sheep carrying mixed infections were lower than the sheep with single infection.

DISCUSSION

The results of this investigation revealed that WAD Sheep in Ibadan were commonly infected with *Anaplasma*, *Eperythrozoon* and *Babesia* species. *Babesia* was least common probably because recovered animals were immuned to re-

infection (Soulsby, 1982). The high mean temperature and low PCV, Hb, RBC and WBC values show that the animals were harbouring these parasites in their body and this probably might be the cause of stunting and pale mucous membrane observed in most of the animals sampled.

Eperythrozoon has been incriminated as the only causative agent of economically important disease of livestock (Kreier and Ristic, 1968). About 50% of the Sheep sampled harboured blood parasites. This agrees with Oduye and Dipeolu (1976) who reported that 49% of 800 dogs sampled were positive for blood parasites. In another study of local and exotic pigs. Dipeolu et al. (1982) reported that 81% of local pigs were positive for blood parasites while only 41% exotic pigs had haemoparasites probably because they were reared intensively.

The relatively high incidence of haemoparasites observed in this study could be due to the favourable environmental conditions for the survival and proliferation of the arthropod vectors responsible for the transmission of the parasites since the Sheep are reared under extensive and semi-intensive management systems.

Thus, there is need for an appropriate treatment against these parasites in infected Sheep. This when carried out will improve the living standard of the owners since WAD Sheep have great economic potential due to their high fertility and early maturity.

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Table 1

Mean temperature and hematological values of sheep carrying single and mixed infections of blood parasites

Parameter	<i>Anaplasma sp</i>	<i>Babesia sp</i>	<i>Eperythrozoon sp.</i>	AB ^a	BE ^b	AE ^c	ABE ^d
No. of sheep infected	24 (11.2%)	4 (1.9%)	12 (5.6%)	16 (7.5%)	2 (0.9%)	26 (12.2%)	24 (11.2%)
T ^o C	37.70 ± 4.44	39.95 ± 0.01	39.20 ± 0.31	38.70 ± 0.31	39.5 ± 0.10	38.9 ± 0.36	40.0 ± 5.55
PCV (%)	26.50 ± 14.08	28.00 ± 4.0	24.20 ± 0.27	26.50 ± 1.46	24.00 ± 1.02	22.20 ± 3.67	26.0 ± 4.82
Hb (g/dl)	9.53 ± 2.10	9.70 ± 1.45	9.62 ± 1.35	9.50 ± 1.20	9.03 ± 1.56	8.65 ± 1.41	8.95 ± 1.60
RBC (10 ¹² /L)	4.81 ± 1.42	4.06 ± 0.14	4.81 ± 2.09	4.2 ± 1.46	6.91 ± 0.09	3.6 ± 1.08	3.65 ± 1.07
MCHC (mg/dl)	44.24 ± 22.0	32.53 ± 3.27	39.76 ± 3.50	35.71 ± 3.62	37.42 ± 6.94	38.98 ± 0.13	49.99 ± 22.28
MCH (pg)	10.02 ± 12.23	19.97 ± 2.08	23.34 ± 10.52	24.50 ± 8.05	13.04 ± 2.95	25.11 ± 5.12	12.60 ± 13.79
MCV (fl)	44.09 ± 29.76	61.3 ± 0.22	64.56 ± 10.50	70.39 ± 29.69	34.72 ± 7.2	64.41 ± 12.91	73.60 ± 11.88
WBC (10 ⁹ /L)	10.68 ± 2.49	8.73 ± 1.86	9.06 ± 1.81	8.50 ± 7.89	9.00 ± 1.01	8.40 ± 1.43	5.92 ± 5.24

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