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A CASE REPORT OF BABESIOSIS IN A 2-YEAR OLD WEST AFRICAN DWARF DOE

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ABSTRACT

A 2-year-old West African Dwarf doe weighing 12Kg was presented to the Large Animal Clinic of Veterinary Teaching Hospital, Michael Okpara University of Agriculture, Umudike with chief complaint of in-appetence, red-coloured urine, weakness and depression for one week. Physical examination showed rapid respiration, emaciation and ticks on different parts of the body. Clinical examination revealed pyrexia, tachycardia, tachypnea and pale conjunctiva. Laboratory investigations showed decrease red blood cell, packed cell volume and haemoglobin concentration. The total white blood cell count obtained was 16.5 x 10^9/ L which was higher than the reference value of 4 – 13 x 10^9/ L. This was as a result of the high neutrophil count. Examination of thin blood smear revealed intracellular organisms suggestive of *Babesia ovis.* Treatment with combination of babesicidal drugs including diminazene aceturate at dose rate of 3.5 mg/kg and oxytetracycline, 20 mg/kg, and supportive therapy comprising vitamin B complex 1.5 ml and iron supplement 2.2mg/kg did not yield a successful result since the goat died after one week of treatment. Use of acaricide and early presentation of sick animals are necessary to reduce losses due to this disease.

Key words: *Babesiaovis*, Doe, Diminazene aceturate, Oxytetracycline, Ticks

INTRODUCTION

Caprine babesiosis is an acute or chronic infectious disease of goats, caused by two species of *Babesia*, *B. ovis and B. motasi* (Taylor *et al.*, 2007). It is widespread in tropical and subtropical regions as well as North Africa, the Middle East, South Eastern Europe, and South America (El Sawalhy, 1999; Demessie and Derso, 2015). *Babesia* parasites are among the most widely distributed blood parasites and have a significant economic, veterinary and medical impact worldwide (Hashemi-Fesharki, 1997; Kivaria, 2006). Babesiosis is a zoonotic disease that may be asymptomatic or result in severe clinical conditions, with severe hemolysis, hepatic, and renal failure in humans (Tanyel*et al.*, 2015). The disease in goat is transmitted by *Rhipicephalus* species in Nigeria (Leeplang and Ilemobade, 1977). Babesiosis has significant morbidity and mortality and the infection is characterized by fever, anorexia, depression, increased respiratory rate, muscle tremor, reluctance to move and cerebral derangement such as circling, head pressing, mania and convulsions (El Sawalhy, 1999; Bwana-Simba, 2009). *Babesia* parasite causing febrile disease of domestic and wild animals is typified by extensive erythrocytic lysis leading to anaemia, icterus and haemoglobinuria. Prognosis is poor in goats showing hemoglobinuria or cerebral signs. In acute cases where PCV values are above 12%, treatment is usually successful (Zaugg, 2009). Clinical observation can support altentative diagnosis of the disease. The demonstration of *Babesia* in thin or thick smears made from peripheral blood and stained with Giemsa is confirmatory. The most commonly used serological tests for

detection of antibodies to babesia in carrier animals are indirect immunoflourescent antibody (IFA) test and enzyme linked immunosorbent assay (ELISA). Polymerase chain reaction (PCR) and real time PCR assays can detect specific parasitaemia at very low levels of infection (Carter and Rolls, 2005). Babesiosis in goats can be treated using diminazene aceturate (3-5mg/kg), phenemidine diisethionate (8-13mg/kg), Imidocarb dipropionate (1-3mg/kg) and Oxytetracycline (10mg/kg) (ElSawalhy, 1999; Ijaz*et al.,* 2013; Ajith*et al.,* 2017). Supportive therapy such as blood transfusions, fluids and hematinics are important (Zaugg, 2009). The control of the disease is by dipping or spraying animals at risk with recommended acaricides and effective quarantine to prevent the introduction of the vector tick (El Sawalhy, 1999**).** This paper reports an unsuccessful treatment of babesiosis in a goat.

CASE REPORT

History and Examination

A 2-year-old West African Dwarf doe weighing 12 Kg was presented to Large Animal Clinic of Veterinary Teaching Hospital, Michael Okpara University of Agriculture, Umudike. The goat had a history of in-appetence, red-coloured urine, weakness and depression for one week. The goat had been dewormed two months prior to the present complaint. It was raised on semi intensive management in a herd of 5 goats. It was fed on fresh pasture and had access to clean water. Physical examination showed rapid respiration, emaciation and ticks on different parts of the body. On clinical examination, the pulse rate was 120 beats per minute (bpm), **r**espiratory rate, 22 cycles per minute (cpm), temperature, 40.2^{o}C and pale conjunctiva was also observed. Ticks, Blood and faecal samples were collected and sent to entomology, clinical pathology and helminthology laboratories respectively for diagnosis. A differential diagnosis of babesiosis, trypanosomiasis, theileriosis and leptospirosis were made.

RESULTS

Haematological analysis revealed a decreased red blood cell count, packed cell volume and haemoglobin concentration. Leucocytosis with neutrophilia was also observed (Table 1). Peripheral blood smear revealed different stages of *Babesia ovis*(Plate 1). The tick identified was *Rhipicephalus eversti eversti*.

Diagnosis

Tentative diagnosis was caprine babesiosis based on the clinical signs and *Babesia ovis* found within the erythrocytes.

Management and Treatment

Treatment was carried out with the combination of babesicidal drugs including diminazene aceturate (Berenil®, Hoechst, Germany) given at dose rate of 3.5 mg/kg deep IM and long acting oxytetracycline (20 mg/kg body weight). Ivermectin at the dose rate of 200µ/kg was also given once. Supportive therapy using B complex vitamins 1.5 ml intramuscularly three times at 24hrs intervals and iron dextran (2.2mg/kg IM once) was administered. The goat however, died one week after treatment.

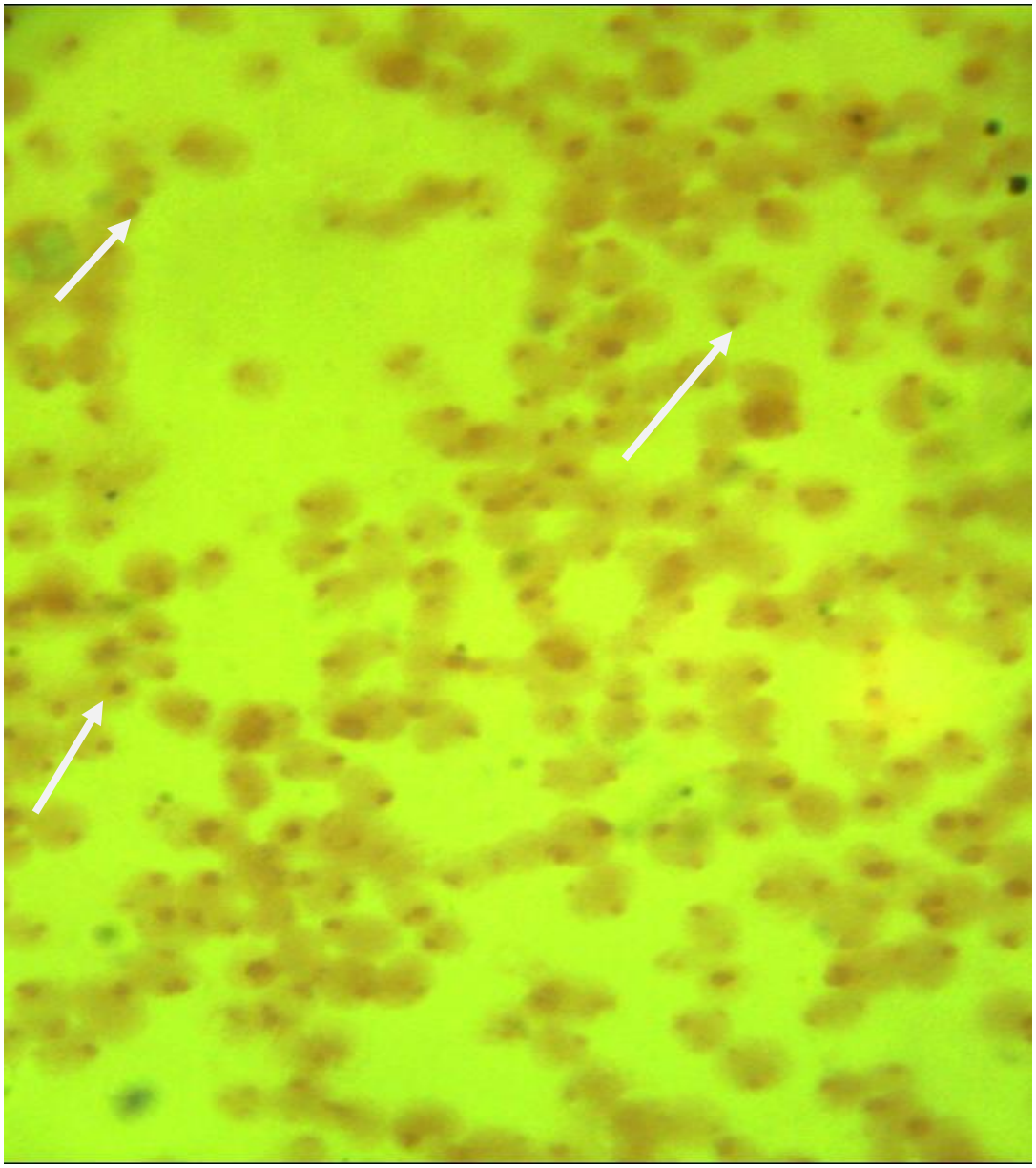


Plate 1: Peripheral blood smear showing intracellular *Babesia ovis* (arrows) in erythrocytes (x100 oil magnification).

Table 1: Haemogram of the sick doe

Haemogram	Obtained values	Normal range *
Packed cell volume (%)	12	22-38
Haemoglobin concentration (g/dL)	4	8-12
Red blood cell (x 10^6/µL)	5.5	8-18
White blood cell (x 10^9/L)	16.5	4-13
Neutrophil count (%)	69	30-48
Lymphocyte (%)	27	50-70
Monocyte (%)	3	0-4
Eosinophil (%)	1	1-8
Basophil (%)	1	0-1

*(Radostits *et al.,* 2000)

DISCUSSION

The clinical signs seen in this case were consistent with those observed by Aktas *et al.* (2007) and Ajith *et al*. (2017). Giemsa-stained peripheral blood smear which revealed *B. ovis* infection was similarly observed by Esmaeilnejad *et al.* (2012).This case reports an unsuccessful treatment of a goat with babesiosis. This contradicts the report of Ajith *et al*. (2017), who treated similar case with combination of diminazene aceturate and oxytetracycline. They administered two doses of diminazene aceturate at 48hr interval while one dose of diminazene aceturate was administered `in this case. The level of anaemia might have contributed to the death of the goat as the PCV and Hb concentration were 12% and 4.0g/dl respectively compared to the corresponding 18.6% and 5.4g/dl observed by Ajith *et al.* (2017). The ticks, *Rhipicephalus evertsi evertsi* infestation seen on different parts of the body might have been accountable for the transmission of the disease. The heavy infestation of the goat by the blood sucking ticks and the haemoparasitic disease caused by the *babesia* parasite contributed to the anaemic state. Ticks feed on blood and each tick can suck about 30 drops of blood to complete its life cycle (DAFF, 2008). This leads to loss of blood with subsequent weight loss and retarded growth. *Babesia ovis* also plays an important role in causing anaemia and kidney dysfunction in goats (Esmaeilnejad *et al.*, 2012). Decreased in RBC, PCV and haemoglobin concentration were similarly observed by Voyveda *et al*. (1997) and Hadadazadeh *et al.* (2002). Anaemia may be ascribed to the immune-mediated phenomenon of autoantibodies directed against component of membrane infected and uninfected erythrocytes (Rubino *et al.*, 2002). Also, the production of toxic haemolytic factors (Rafaj, 2007) and mechanical damage by trophozoite intra-erythrocytic binary fission might have led to the anaemia (Zobba *et al.*, 2008). Leucocytosis observed was due to neutrophilia which was consistent with the findings of Hadadazadeh *et al.* (2002), Muthuramalingam *et al*. (2014) and Ajith *et al.* (2017). Ivermectine was given against the ticks, vitamin B complex was administered to improve appetite and boost the immune system and iron dextran, a hematinic was given to enhance haemopoiesis.

Effective treatment of babesiosis in goats will require early presentation and the disease may be

controlled by applying best agricultural practices such as effective quarantine of infested animals to prevent the introduction of the vector tick and regular dipping of animals with recommended acaricide. Caution should be taken to prevent accidental transfer of blood from one animal to another especially during castration and dehorning.

CONCLUSION AND RECOMMENDATION

Caprine babesiosis leads to significant loss of livestock due to severe effect the babesia parasites have on the haemogram. To reduce losses, it is recommended that effective control measures are applied to reduce infection and spread. Timely presentation of sick goats for diagnosis and treatment will help to improve health and production.

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