

Cattle Babesiosis under Clinical Management: A Case Report

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Abstract:

Our study performed on 13February 2017, from a farm in El-Wisata location in El-Gabal El-Akhdar area, El-Beida, Libya, two female cross bred cows aged 7-3 years old weighing 270 , 300 kg were infected with Babesiosis. The two main species known to affect cattle are *Babesia bovis* and *Babesia bigemina*. In this case report, the clinical signs observed were; fever 39.1oc and 39.4oc, loss of weight, slight pale mucous membranes, presence of ticks. The blood smear revealed the presence of *Babesia* in Red Blood Cell (RBC). Diagnostic work up was carried out by taking blood sample from the diseased cattle for RBC, WBC, PCV, MCH, MCHC, MCV, HB and PLT. Blood samples were also examined for some Biochemical parameters; Total Protein, Albumin, Calcium, Potassium, Sodium and Chloride. Urine samples were examined by urine analysis reagent strips. In this study, Haematological analysis revealed increase in lymphocyte absolute count and mid-range absolute count (WBC) but, other haemato-Parameters values were within normal range. Serum Biochemical tests showed decrease in Total Protein Values. Also, Urinalysis revealed Bilirubin (+, ++) by reagent strips. The animal was treated with a single dose of Diminazene (berenil) IM, at 5mg/kg BW, with supportive therapy.

Keywords: *Cattle, Babesiosis, Clinical signs, 5 % Diminazene.*

Introduction:

Bovine babesiosis is a tick-borne disease of cattle caused by the intra-erythrocytic protozoan parasite *Babesia*. Two species are inexpensively

important in southern Africa: *Babesia bovis* and *Babesia bigemina* [1], coinciding with the distribution of their vectors [4] *Babesia bigemina* is transmitted by both *Rhipicephalus (Boophilus) decoloratus* and *Rhipicephalus (Boophilus) microplus* and has a much wider distribution than *B. bovis*, which is only transmitted by *R. (B.) microplus* [2]. *Rhipicephalus (B.) microplus* is expanding its range in South Africa [3].

Diagnosis:

- 1- **History and Clinical Signs:** On 13th February 2017, from a farm in El-Wisata location in El-Gabal El-Akhdar area, El-Beida, Libya, two females cross- bred cows aged 7years 300kg, 3 years old weighing 270 kg were examined clinically with history of fever 39.1°C and 39.4°C, loss of weight (Figure1) presence of pale mucous membranes (Figure2), increased respiratory rate and dark yellow colored urine that was collected for urinalysis reagent strips (Table 1). On physical examination of cows, ticks were found on body of the affected animals (Figure 3).



Figure 1:(1) On left-hand picture female cross bred cow aged 7 year, weighing is 300 kg, see loss of weight.(2) On right-hand picture female cross bred cow aged 3 year weighing is 270kg, loss of weight.



Figure 2: Presence of pale mucous membrane at Conjunctiva region on both cows.



Figure 3: Hard ticks of the family Ixodidae, *Boophilus microplus*.

- 2- Laboratory Diagnosis: The thin and thick smear stained with Giemsa revealed the presence of piroplasmic organisms Babesia in RBC (Figure 4). Blood was collected from the jugular vein into EDTA bottle to check for some haematological parameters (RBC, WBC, PCV, MCH, MCHC, MCV and PLT) (Table 1) and into empty bottle for serum to check Biochemistry parameters (TP, Albumin, Calcium, Potassium, Chloride) (Table 1). Urine was collected for reagent strip.

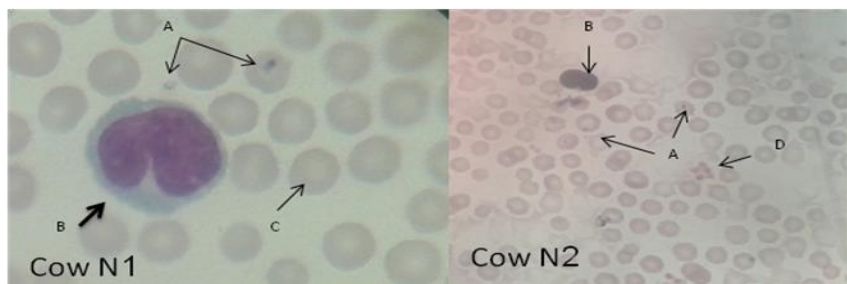


Figure 4: Stained blood smears showing (A) Babesia sp, (B) Monocyte, (C) Normal RBC, (D) Platelets.

Table 1: Hemato-biochemical values and urinalysis of affected cows:

Hemogram	Laboratory Parameters	Results of cow N1	Results of cow N2	Reference values
	RBC X10 ⁶ / μL	6.01	6.9	5-8
	Hemoglobin g/L	10.4	9.5	8-14
	PCV (%)	36.15	29.89	35(26-42)
	MCV (fL)	60	49	50(40-60)
	MCH (pg)	17.4	15.6	14(11-17)
	MCHC (g/dL)	28.9	31.8	30(26-34)
	PLT X10 ³ / μL	105	150	150-400
	WBC X10 ³ / μL	11.10	2.57	4-12
	LYM X10 ³ / μL	5.16	1.03	1.3-4
	MID X10 ³ / μL	0.99	0.96	0.15-0.7
	GRA X10 ³ / μL	4.96	0.57	2.5-7.5
Serum Biochemical Values				
	TP (g/dL)	6.0	5.2	7.2 (6.1-8.1)
	Albumin (g/dL)	2.9	2.4	2.7-3.44
	Calcium M mol/l	6.3	7.1	5.4(4.7-6.1)
	Na M mol/l	141.3	133.7	142(132-152)
	K M mol/l	4.31	4.52	4.8(3.9-5.8)
	CL M mol/l	104	108	104(97-111)
Urinalysis				

Treatment:

Berenil®5% (Diminazene Aceturate) injection, 1 ml/20 kg, intramuscularly and Ivermectin 2ml/100kg sc. Berenil is an antiparasitic drug for treatment and control of protozoa infection in cattle. It also protects cattle against Babesiosis. Ivermectin was instituted for the control of endo and ectoparasites.

Discussion:

Climate is an important factor in the geographic distribution of arthropod vectors. Environmental and climatic global change is currently exerting a strong impact on the transmission and distribution of tick-borne pathogens [4]. The effect of climate on infectious diseases is largely determined by the unique transmission cycle of each pathogen [5].

The cows with the history and clinical signs of fever 39.1°C and 39.4°C, loss of weight presence of pale mucous membrane, increased respiratory rate and dark yellow colored urine. On physical examination of cows, ticks were found on body of animal so should be suspected for Babesiosis. The disease diagnosed by the examination of blood smears stained with Giemsa. Thick and thin films prepared, but *Babesia* is best in thin films [6].

In this study, Haematological analysis revealed haemato- Parameters values, expect of increasing in lymphocyte absolute count and mid-range absolute count (WBC), within the normal range. Serum Biochemical tests showed reduction in Total Protein Values. Also, Urinalysis revealed Bilirubin in the specimens.

In addition, Berenil® 5 % (Diminazene Aceturate) injection, 1 ml/20 kg, intramuscularly, was useful for treatment, and Ivermectin 2ml/100kg sc. common acaricides used for combating ticks [7]. Detection and treatment of babesiosis are important tools to control babesiosis. Microscopy detection methods are still the cheapest and fastest methods used to identify *Babesia* parasites although their sensitivity and specificity are limited [8 and 9].

Conclusion:

In conclusion, Babesiosis is caused by the genus *Babesia* which is intra-erythrocytic protozoan parasites that infect a wide range of domestic

animals. This disease is a tick transmitted and is distributed worldwide. Two most important species in cow are *B. bovis* and *B. bigemina*. It can be controlled by vector control, vaccination and extra chemoprophylaxis. In the present case report the most significant features of the disease are the persistent and consistent lymphocytosis and monocytosis that proves suggestive of the disease from the blood picture and the clinical signs.

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