

SUCCESSFUL MANAGEMENT OF *Babesia bigemina* INFECTION IN A TRANSITION COW

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ABSTRACT

A pluriparous crossbred Jersey cow in early lactation was reported to the Veterinary Clinical Complex, Orathanadu with the history of anorexia, dull and depressed, coffee coloured urine and sternal recumbency for 3 days. On physical examination mucous membranes were slightly icteric, prescapular lymph node was of optimal size and presence of ticks on the surface of the body. Clinical examination revealed subnormal temperature (36.7^o C), heart rate - 85 bpm, respiratory rate – 41 bpm (Tachypnoea). Hematology revealed PCV 51%, Hb – 5.2 g /dl and RBC – 3.2 mill/ cumm. Animal was treated with diminazene aceturate (Berenil[®] MSD Pvt. Ltd.,) @3.5 mg per kg body weight administered deep IM single dose, tranxanemic acid 10 ml IM, oxytetracycline @ 20 mg/ kg IV and supportive therapy for 5 days. Clinical improvement was observed on 7th day of treatment. This present case report describes successful management of Babesia bigemina infection in a transition cow.

Key words: *Babesia bigemina*, Coffee colored urine, Cow, Diminazene acetate, Transition period

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Babesia bovis causative organism for Bovine babesiosis is transmitted by *Rhipicephalus* ticks, and causes progressive haemolytic anaemia. A pluriparous crossbred Jersey cow in 28 days of lactation was reported to the Veterinary Clinical Complex, Orathanadu with the history of anorexia, coffee coloured urine and sternal recumbency for a period of three days. Mucous membranes

were icteric (Fig. 1a and 1b). Bilaterally prescapular lymph node was enlarged, presence of ticks of the body were observed. Body temperature was subnormal (36.7° C), the heart rate was -85 bpm and respiratory rate was 41 bpm (Tachypnea). Blood, urine and serum samples were collected.

Haemogram revealed elevated PCV (51%), and anaemia (Hb – 5.2 g / dl and RBC – 3.2 mill/ cmm). Actually, in babesiosis PCV decreased than normal value. In this case mismatching observed. Serum biochemistry revealed elevated BUN and Creatinine kinase (Table). Peripheral blood smear revealed presence of *Babesia bigemina* (Fig.2). Urinalysis using urine strips revealed presence of RBC (250/ μ l), bilirubin (0.5mg/dl), urobilinogen (1.0 mg/ dl), ketone bodies (10mg/ dl), protein (1000 mg/ dl) and leukocytes (10 WBC / μ l). Protein concentration in urine sample was assessed by directly placing one or two drops of urine sample in prism of refractometer and it was recorded as 2.5 g /dl.



Fig. 1a Icteric conjunctival mucous membrane



Fig 1b. Icteric vulval mucous membrane

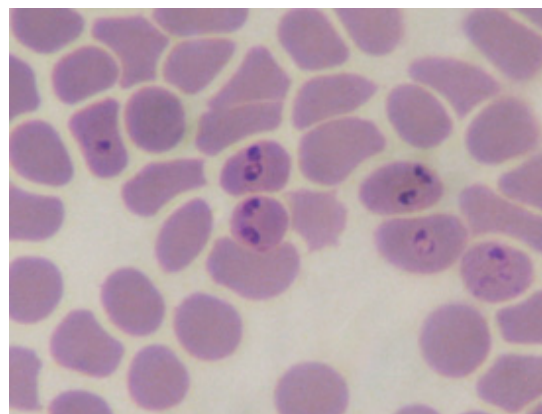


Fig. 2 *Babesia bigemina* inside the RBCs

Table. Hematobiochemical findings in a babesiosis affected cow

Parameters	Before Treatment	After Treatment
Hb (g/ dl)	5.2	6.7
PCV (%)	51	45
RBC (mill./cumm)	3.2	4.1
BUN (mg/ dl)	45.1	23.7
Creatinine (mg/ dl)	1.18	1.09
Glucose (mg/ dl)	46	53

Total protein (g/ dl)	5.9	5.5
Albumin (g/dl)	2.44	2.56
ALT (IU/ L)	48	49
AST (IU/ L)	53	78
ALP (IU/ L)	219	342
CK (IU/ L)	604	276
Calcium (mg / dl)	7.6	8.1
Phosphorus (mg / dl)	6.06	6.03
Magnesium (mg / dl)	4.74	4.67

The cow was treated with Diminazene aceturate (Berenil® MSD Pvt. Ltd.,) @3.5 mg per kg body weight deep IM single dose, Tranxanemic acid 10 ml IM, Oxytetracycline @ 20 mg/ kg IV, inj. Meloxicam @ 0.5mg / kg IM, Vit.B₁, B₆, B₁₂ 10ml IM and Elixir. Sharkoferrol (Alembic Pvt. Ltd.,) for 5 days. Fluids Dextrose normal saline 10 ml/kg BWT IV per day given for 5 days to prevent hypoglycaemia which occur in babesiosis due to the utilization of glucose by parasites. In this case Oxytetracycline given to reduce or further prevention of carrier state of *Babesia*. Tranxanemic acid act as antifibrinolytic, further prevention of cystitis and meloxicam which aid to reduce the inflammation because of down and also act as antipyretic because of *Babesia* spp., Supplement Elixir Sharkoferrol was gave to aid in erythropoiesis, contains haemopoietic ingredients can be given as supplement for Anaemia or to alleviate anaemia due to tick infestations, haemoprotozoan diseases. On 7th day there was clinical improvement in animal. The predominant symptoms of pale mucus membrane, jaundice, increased respiratory rate, haemoglobinuria, and fever as observed in the present case was agreement with previous reports (Kuttler, 1981; Wadhwa *et al.*, 2008; Jyothrisree *et al.*, 2013). The marked anemia

and haemoglobinuria in cattle were associated with severe haemolytic process associated with the presence of *Babesia* piroplasm inside the erythrocytes and destruction of large number of erythrocytes by the parasite results in haemoglobinaemia and consequently haemoglobinuria (Georgi *et al.*, 1990).

In case of postparturient haemoglobinuria there will be low phosphorus levels in serum. But in this present case, phosphorus value was within normal range. So, coffee coloured urine may be of *Babesia* induced haemoglobinuria. Elevation in creatinine kinase at initial presentation could be due to recumbency for 3 days. Mild hypocalcaemia was observed (7.6mg/dl) in this case. Recumbency may be associated with anaemia. Not of low calcium. The classical microscopic examination of *Babesia* piroplasm in Giemsa-stained thin blood smear is a gold standard test which is relatively cheap and quick method. However, in chronic infection, it has low intensity and usually fails to detect carrier (Jithendran, 1997). In this present case peripheral blood smear revealed large pear shaped piroplasms in pairs (Fig.2).

CONCLUSION

Successful treatment of babesiosis in a cow with diminazene aceturate is placed on record.

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REFERENCES

- Jithendran, K.P. (1997). A note on haemoprotozoan parasites of cattle and buffaloes in Kangra valley of Himachal Pradesh. *Indian Journal of Animal Science*, **67**:207-208.
- Kuttler, K.L. (1981). Chemotherapy of babesiosis: a review, In: Babesiosis, Ristic M. and Kreier J.P. (Eds.), Academic Press, New York, London, Toronto, Sydney, San Francisco, pp. 65-85.
- Wadhwa, D.R., Pal, B. and Maandial, R.K. (2008). Epidemiological and clinico-therapeutic study of babesiosis in cattle. *Indian Journal of Veterinary Research*, **17**:22-24.
- Jyothrisree, C., Naik, S. and Samatha, V. (2013). A study on prevalence and clinico-therapeutic management of babesiosis in H.F. crossbred cattle in Anantapur district of Andhra Pradesh. *International Journal of Food, Agriculture & Veterinary Sciences*, **3**(2): 88-91.
- Georgi, J.R., Georgi, M.E. and Theodrides, V.J. (1990). Parasitology for Veterinarians. 5th ed. W.B. Saunders Company, Harcourt Brace Jovanovich, Inc., Philadelphia, Pennsylvania.