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Clinical Article

THEILERIOSIS IN A INDIGENOUS KANKREJ CALF: THERAPEUTIC MANAGEMENT WITH AID OF BLOOD TRANSFUSION

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SUMMARY

A one month old male Kankrej calf was presented with a history of dullness, non-sucking of milk, fever and no response to treatment with antibiotics and antipyretics for last three days. Blood smear stained with Giemsa showed several piroplasms of *Theileria annulata*. Treatment was instituted with immunosuppressive dose of corticosteroid and Oxytetracycline @ 22mg/kg B.wt intravenously along with blood transfusion for initial few days. The animal showed uneventful recovery and blood smear revealed no parasitemia after seven days. Administration of corticosteroid and blood transfusion in initial days of severe haemoprotozoal diseases is very important for life saving.

Keywords: Blood transfusion, Corticosteroid, Kankrej calf, Oxytetracycline, Theileriois

Theileriosis is considered as the most important blood protozoan disease of dairy animals caused by *Theileria annulata*. Presence of tick vector of the genus *Hyalomma anatolicum* and hot humid climate is responsible for causation of this disease. As per Sharma and Gautam (1977), exotic and crossbreed are highly susceptible to the tick borne haemoprotozoal disease. Usually Kankrej breed of Indigenous cattle are generally resistant to theileriosis due to its innate immunity. This presented case report demonstrates a rare case of theileriosis in a Kankrej calf along with its successful therapeutic management.

A one month old male Kankrej calf (30 kg body weight) was presented to Teaching Veterinary Clinical Complex, Deesa, Gujarat with history of dullness, non-sucking of milk, high rise of fever and no response to treatment with antibiotics and antipyretics since three days. Clinical examination revealed high fever (106 ºF), increased lacrimation, dry and rough hair coat, bilaterally enlarged prescapular lymph nodes and tachycardia with tachypnea. Clinical examination revealed whitish mucous membrane indicating severe anemia as per FAMCHA protocol (Grace *et al.*, 2007). For determining the cause of severe anemia, two ml blood from jugular vein was collected for estimation of complete blood count. Few more blood smears were also prepared from tip of ear and stained with Giemsa stain. One fecal swab and feces sample were also collected to rule out the round worm infestation. Fecal examination showed absence of any parasitic infestation. Giemsa stain revealed signet ring shape *Theileria annulata* organism in the several RBCs (Fig. 1). CBC revealed RBC (0.98 X10^6 /µl), WBC (13.6 X 10^3 /µl), Platelets (239 X10^3 /µl), Hb (1.8 g/dl), HCT (5.2 %) count indicating that calf has severe anemia along with hemorrhagic shock. DLC profile revealed 46 lymphocytes, 1 monocyte, 48 neutrophils and 5 eosinophil for every 100 cell counts.

Due to the extreme condition of calf, it was decided to perform emergency blood transfusion to combat against the hemorrhagic shock and prevent the collapse of calf from respiratory failure. For donor, one healthier cow from same owner (400 kg weight) was brought to clinic and its initial CBC and DLC was performed to check the status of animal. With donor and recipient blood, major and minor cross reaction was also done to avoid the incompatibility reaction during blood transfusion. Emergency blood transfusion was done by collecting 500 ml of total blood in a sterile plastic container along with 3.8% sodium citrate solution from jugular vein. Within 45 minutes, collected blood was slowly administrated @ 10 ml/kg body weight to recipient calf.

In Theileriosis, hemolysis occurs due to iso antibody to RBC (Gwamaka *et al.*, 2004). As per the study of Katakai *et al.*, 2002, malarian parasite growth was significantly suppressed by Dexamathasone. This low RBC is much important to pass that critical phase. To prevent this iso antibody lysis, immunosuppressive dose of Dexamethasone@2.2 mg/kg.b.wt was administered. Dexamethasone has also stimulatory action on bone marrow to immediately release of reservoir RBC to circulation to help animal to pass that life-threatening phase of anemia. Usually animal with low hemoglobin and low RBC die due to lung congestion followed by respiratory failure. There was a reduction in vascular permeability in the animals treated with dexamethasone that prevented them from pulmonary oedema and sudden collapse in East coast fever caused by *Theileira parva*

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Fig. 1. Animal withpale mucous membrane and enlarged pre-scapular lymph node

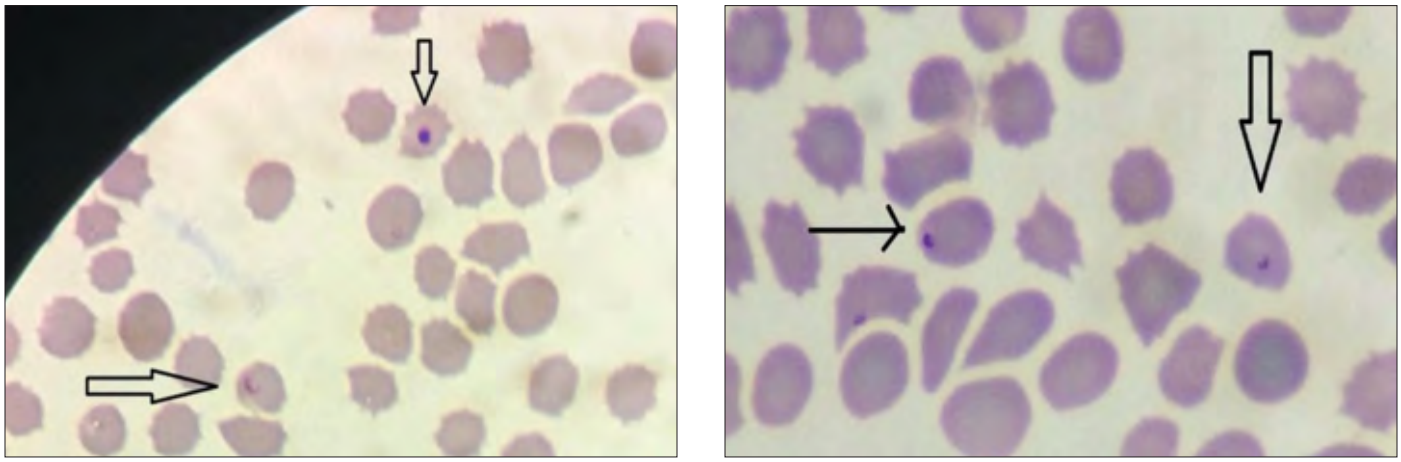

Fig. 2. Piroplasm of Theileriaannulata inside RBCs

Fig. 3. Collection of blood from donor animal, blood transfusion in recipient animal and animal after recovery (3 weeks of post treatment)

(Gwamaka *et al.*, 2004).

Choice of drug to treat theileriosis is Buparvaquone (Muhammad *et al.*, 1999). However, Akhter *et al.* (2010) reported immediate death with sudden administration of Buparvaquone to highly anemic animal. Hence, Oxytetracycline @22 mg/kg b.wt intravenously for seven days was usedto prevent sudden death. Oral hematinic mixture consisting of $FeSO_4$, $CuSO_4$ and $CoSO_4$ with Vitamin B1, B6 and B12 was also given for one month to combat anemia. Jaggery is considered as a good source of iron for large animals. So, owner was asked to supplement the food with Jaggery for few days (Gupta *et al.*, 2004).

After seven days, again blood smear was checked and found negative for theileriosis. On fifteen and twenty-

Table1

Alterations in hematological parameters before and after treatment

Parameters	Prior to treatment	On 15th day	On 21st day
WBC (103 /µl)	13.6	11.3	10.2
RBC (106 /µl)	0.98	1.97	1.58
Hb (g/dl)	1.8	2.5	3.3
HCT (%)	5.2	7.6	10.7
MCV (fl)	53.1	38.6	67.7
MCH (pg)	18.4	12.7	20.9
MCHC (g/dl)	34.6	32.9	30.8
PLT (103 /µl)	239	754	392
LY	46	55	72
MO	1	0	0
GR	48	44	28
EO	5	1	0

one days of initial treatment, again blood was collected and checked for improvement in the CBC count. So, this case study suggested that initial use of immunosuppressive dose of steroid with Oxytetracycline and blood transfusion can help to save the animal suffering from life threatening anemia due to Theileriosis.

The animal showed marked recovery after 21 days of treatment and started taking food normally. Buparvaquone is the drug of choice for tropical bovine theileriosis but immunosuppressive dose of steroid with Oxytetracycline and whole blood transfusion can be adopted as a therapy for severely anemic cases to avoid complication. Clinical recovery can be observed after third week of treatment without any remission.

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