

Popular Article

Theileriosis: A Haemoprotozoan Disease of Bovines

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Abstract

The common haemoprotozoan diseases are mainly Theileriosis, Babesiosis, Anaplasmosis and Trypanosomosis of bovines. These diseases are transmitted by the various types of ticks such as, *Hyalomma anatolicum*, *Boophilus microplus*, *Dermacentor* sp., *Ixodes* sp. etc. These haemoprotozoan diseases have great impact on health of animals, milk yield, draft and meat production, which in turn affects overall animals production, hence lowering agricultural and socio economic development in India. Theileriosis is an important disease of ruminants and caused by ticks *Hyalomma anatolicum*. However, the most of haemoprotozoan parasites cause anaemia by inducing erythrophagocytosis. Therefore, it is important to control these blood parasitic diseases by checking the tick population.

Keywords: Theileriosis, Haemoprotozoan disease, Bovines

Introduction

- Theileriosis in bovines (cattle and buffalo) is caused by the *Theileria annulata*, *Theileria parva* and *Theileria mutans* haemoprotozoan parasites.
- They are intracellular parasites found in the red blood cells, lymphocytes and histiocytes of vertebrate hosts.
- Cross bred cattle are more at risk than indigenous cattle.
- Parasites are pleomorphic in nature and occur as minute round, ovoid, rod like, comma shaped or irregular forms found in the lymphocytes, histiocytes and RBCs of vertebrate hosts.
- *Theileria annulata* and *Theileria parva* are transmitted by ixodid ticks of genus *Hyalomma anatolicum anatolicum* and *Rhipicephalus appendiculatus* respectively. There is trans-stadial transmission take place.
- Disease caused by *Theileria annulata* is also called Bovine Tropical Theileriosis (BTT) and by *Theileria parva* is called East Coast Fever OR Turning sickness.

Clinical sign and symptoms of Bovine Tropical Theileriosis disease

- Incubation period is 7-23 days
- Enlargement of superficial lymph nodes of animals, lymphadenopathy
- High fever (40.5-41.5⁰C) take place
- Progressive leukopenia
- Heart rate and pulse rates increases and there is laboured breathing
- Serous nasal discharge. Nasal discharge may be unilateral or bilateral, lacrimation and coughing
- Petechial haemorrhages on conjunctivae of eyes
- Anaemia take place



Swelling of superficial lymph node

Clinical sign and symptoms of East Coast Fever disease

- Mainly nervous signs take place
- Circling disease or turning sickness

Post-mortem findings

- Punched out necrotic ulcers in the abomasum's of animals.
- In young calves abomasum contains clots of undigested milk.

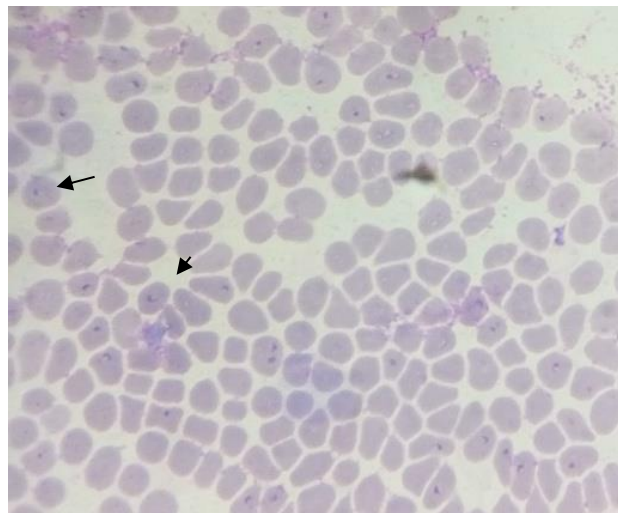
Haematological changes

- Haemoglobin level decrease (as low as 2 g/100 ml of blood)
- TEC and PCV decrease

- Leucopenia in later stage
- Anisocytosis and polychromasia observed with presence of immature RBCs
- Biochemical changes include low levels of serum Calcium and proteins.

Diagnosis

- Diagnosis of disease is based on:
 1. History of the high prevalence of *Hyalomma anatolicum* ticks
 2. Clinical symptoms- mainly high fever with enlargement of superficial lymph nodes
 3. Demonstration of piroplasms in RBCs and schizonts (KBB) in lymphocytes in biopsy smears from lymph nodes.
 4. Serological tests
 - a. Complement fixation test (CFT)
 - b. Capillary tube agglutination test
 - c. Fluorescent antibody technique (FAT)
 - d. Haemagglutination inhibition (HI)
 5. Molecular test- Polymerase chain reaction (PCR)



Blood picture showing the *Theileria* sp. parasite

Treatment

- Buparvaquone (Butalex) @ 2.5 mg/kg body wt., intramuscular injection
- Parvaquone @ 20 mg/kg body wt., I/V route as a single dose
- Long acting oxytetracycline 20 mg/kg body wt., intramuscular injection every four days
- Oxytetracycline @ 15 mg/kg body wt., intramuscular injection 4-6 times daily
- Halofuginone @ 1-2 mg/kg body wt. Orally once

Control

- Bovine tropical theileriosis control measures include prophylaxis and chemotherapy with supportive treatment.
- Prophylaxis consists of chemoprophylaxis, immunoprophylaxis and control of ticks.
- Rakshavac-T is an attenuated tissue culture vaccine contains *Theileria annulata* schizont infected bovine lymphoblasts, recommended for use in crossbred and exotic cattle aged two months and above. One subcutaneous injection of 3 ml is given yearly to the animals.
- An alternative approach to immunize animals against tropical theileriosis is to use the infection and treatment method. The ground-up tick supernate (GUTS) equivalent to 2 infected acini for infection and simultaneous treatment with Buparvaquone @ 2.5 mg/kg body wt. Can safely be used in endemic areas without any ill effect.

Conclusion

Theileriosis is a haemoprotozoan disease which causes great losses to the livestock owners in terms of economy. Some animals might also be died in this disease. If any animal is infected with this disease, treatment is costly to treat the infected animals because Butalex injection is costly which contains Buparvaquone, is used to treat the infected animals. Buparvaquone is the drug of choice for theileriosis. So, it is important to control this disease by controlling the tick population with the help of acaricides.