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Popular Article

Theileriosis in Cattle

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Importance

Theileriosis is an acute lymphoproliferative disease with high levels of morbidity and mortality in susceptible cattle. The two organisms with the greatest economic impact in cattle are *Theileria parva* and *T. annulata*, which cause East Coast fever/ corridor disease and tropical theileriosis. *Theileria* species are spread by ticks. The most important vector for *T. parva* is *Rhipicephalus appendiculatus*. *Theileria parva* is transmitted by *Rhipicephalus appendiculatus*. *Theileria annulata* is transmitted by ticks of the genus *Hyalomma* and causes East Coast Fever (ECF) in susceptible cattle. The incubation period for East Coast fever is 7-12 days in experimentally infected animals. It resulted in reduced milk production, reduced weight, blood loss, damaged to hides and skins, stress and irritation and depression of immune function.

Aetiology

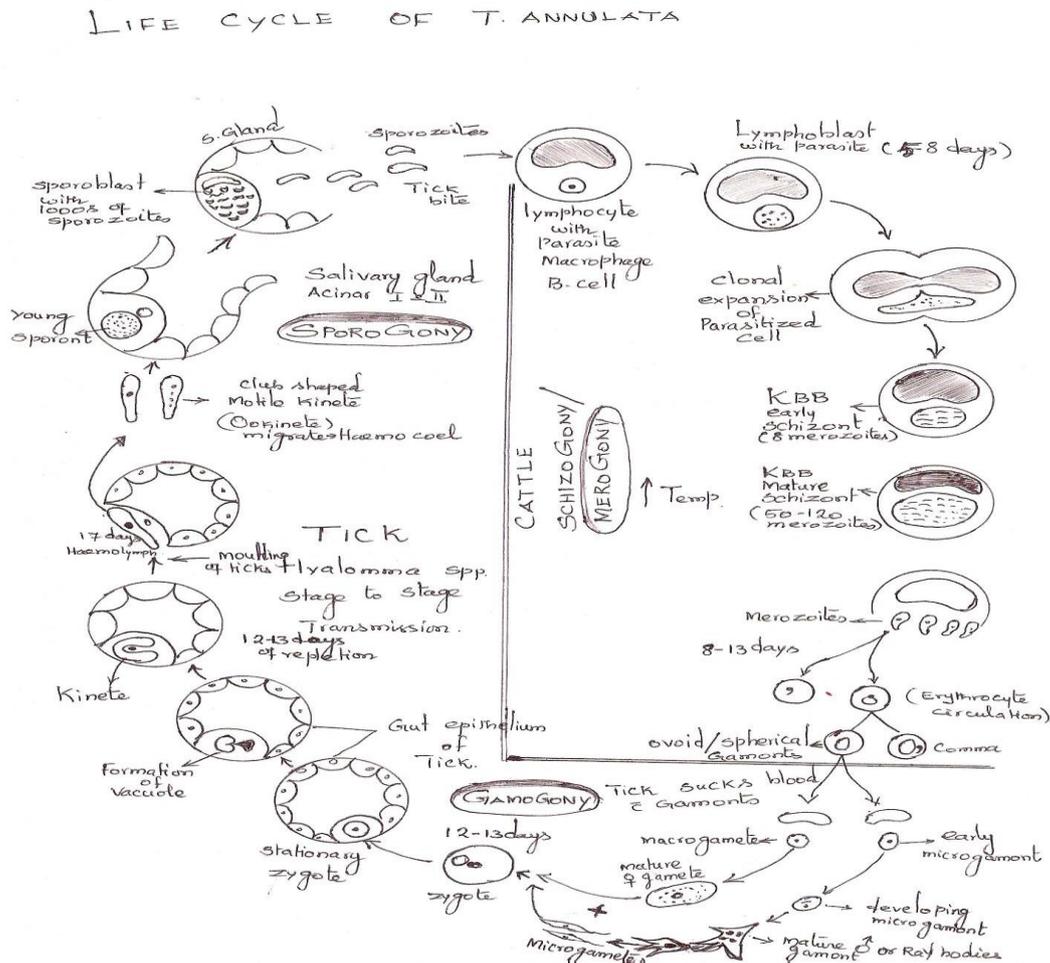
Theileriae are obligate intracellular protozoan parasites phylum Apicomplexa, order Piroplasmida, family Theileriidae, genus *Theileria*. They are most closely related to *Babesia*, from which they differ by having a developmental stage in leukocytes prior to infection of erythrocytes. This agent infects both wild and domestic Bovidae throughout much of the world and some species also infect small ruminants. There are several identified *Theileria* spp. that infect cattle; the most pathogenic and economically important are *T. parva*, which causes East Coast fever (ECF), *T. annulata*, which causes Tropical theileriosis (TT).

Life cycle

Transtadial (stage-to-stage) transmission occurs. If the larvae pick up infection from



diseased animals while feeding, the nymphal stage will be able to transmit the infection to susceptible host. Congenital infections rarely occur in calves.



Incubation Period

The incubation period for East Coast fever is 7-12 days in experimentally infected animals, although some cases might appear as late as 3 weeks. The incubation period for tropical theileriosis is approximately 1-3 weeks.

Clinical manifestations in theileriosis are classified into four forms

1. Per acute form

Animal dies in 3-4 days of infection following a spell of high fever, but this form is not common.

2. Acute form

This form of disease is very common, characterized by high fever (104 –107 °F) as first sign, in appetite, cessation of rumination, rapid heartbeat, weakness, lacrimation, decreased milk production, swelling of superficial lymph nodes (prescapular/precrural) and eye lids, diarrhoea containing blood and mucus, mucous membrane is icteric and petechial



haemorrhages are found. There is a marked anaemia, but no haemoglobinuria. Incoordination, grinding of teeth and utricularial skin lesions in some cases may be seen. Affected animals become emaciated and death may occur.

3. Sub-acute

There is an irregular intermittent fever, last for 10 –15 days, after which animals may recover spontaneously. In pregnant animals' abortion may occur.

4. Chronic form

There will be intermittent fever, inappetence, marked emaciation, anaemia and icterus. In some cases, due to stress conditions, the chronic form of disease may develop to acute form and animals may die in 1-2 days.

Diagnosis

In live animals, theileriosis can be diagnosed by finding piroplasms or schizonts in Giemsa-stained thin smears from blood or lymph node biopsies, respectively. The organisms are usually rod-shaped or oval in blood smears, although other forms can be seen. Piroplasms may be absent or uncommon in animals with acute illnesses caused by some organisms, such as buffalo-derived *T. parva* in cattle. At necropsy, schizonts can be detected in impression smears from many internal organs of sick animals, such as the lungs, lymph nodes, spleen and liver. The number of piroplasms is typically too low to be detected in the blood of carriers.

Treatment

Buparvaquone, often accompanied by anti-inflammatory drugs and antidiuretics, if there is evidence of pulmonary edema. Treatment is effective when applied in the early stages of clinical disease but may require more than one dose. Supportive therapy Vitamin B complex with liver extract Iron tonics – in severe case of anemia and Blood transfusion.

Control of theileriosis

1. **Tick control:** using various classes of insecticides such as Deltamethrin, Flumethrin and Cypermethrin at the concentration of 0.1 – 0.2 %.

2. Vaccination

Vaccine Rakshavac – T, is produced by Indian Immunologicals Ltd., Hyderabad, for immunization of cattle against theileriosis. It contains schizont infected lymphocytes (SIL), attenuated through 150 passages, at the concentration of 10^6 cells / dose. Vaccine should be stored in LN₂, but reconstituted vaccine must be used within 2 hours.

