

Theileriosis in Buffaloes: Early Recognition, Rational Treatment and Tick-Based Prevention

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Abstract

Theileriosis represents an important vector-borne protozoal disease of bovines and may become a major source of morbidity, production loss and mortality in susceptible buffaloes. The infection is produced by members of the genus *Theileria*, with transmission occurring predominantly through ixodid ticks. The clinical picture is influenced by the infecting species as well as host age, breed, immune status, parasite burden and previous exposure. Affected animals may show pyrexia, anorexia, depression, lymph-node enlargement, pallor, anaemia, weakness and declining milk production; advanced disease can be accompanied by respiratory compromise, recumbency and death. A practical diagnostic approach combines clinical examination with peripheral blood-smear evaluation, haematology and, where facilities permit, molecular testing. Treatment is most successful when initiated early and combines an appropriate antitheilerial drug with individualized supportive measures for dehydration, anaemia, poor intake and other complications. Since ticks drive transmission, prevention should focus on integrated tick management, routine examination of animals, careful introduction of new stock and maintenance of hygienic housing.

Keywords: Buffaloes; Theileriosis; *Theileria annulata*; Tick-borne disease; Haemoprotozoa; Anaemia; PCR; Tick control

Introduction

Buffaloes make a major contribution to dairy farming in India and are closely linked with the income and food security of many livestock-owning households. Diseases transmitted by ticks can interfere with this contribution by reducing productivity and, in severe infections, causing death. Theileriosis is one such disease and results from infection with intracellular protozoa belonging to the genus *Theileria*. Depending on the parasite involved and the susceptibility of the host, infection may remain relatively mild or progress rapidly to severe systemic illness. In buffaloes, prompt recognition is particularly valuable because fever, anaemia, lymphadenopathy and reduced

production can otherwise be mistaken for several other infectious or haemoparasitic conditions.

Causative Organisms

Theileria are intracellular protozoan parasites with a life cycle involving both a mammalian host and a tick vector. Among bovine-associated species, *Theileria annulata* is especially relevant to tropical theileriosis in India. *Theileria parva* is responsible for East Coast fever and is of major importance in susceptible cattle in endemic parts of Africa. The biological behaviour and pathogenicity of *Theileria* species differ, so interpretation of clinical disease should consider the epidemiological setting as well as laboratory findings.

How Infection Spreads

Infection is generally acquired when a susceptible bovine is bitten by an infected ixodid tick. The parasite develops within the vector and is subsequently transmitted during feeding on another animal. Transmission pressure is likely to increase where tick burdens are high, acaricide programmes are poorly implemented, new animals are introduced without adequate screening, or animals are moved between areas with different tick exposure. Climate and local environmental conditions that favour tick survival can further influence disease occurrence.

Clinical Presentation

The severity and combination of signs vary with the infecting *Theileria* species, parasite load and host susceptibility. Commonly observed findings include high body temperature, depression, poor appetite, reduced rumination, weakness, enlarged superficial lymph nodes, pale mucous membranes, anaemia, reduced milk yield, weight loss, dehydration and increased respiratory effort. Advanced cases may become recumbent and develop marked anaemia or respiratory distress, with death occurring in animals that deteriorate severely.

Lymph-Node Enlargement: A Useful Field Clue

Palpation of superficial lymph nodes can add important information during a field examination. The prescapular and prefemoral nodes should be assessed, especially in a febrile animal showing pallor or reduced productivity. Enlargement increases clinical suspicion but is not diagnostic by itself; laboratory confirmation is required whenever feasible because lymphadenopathy can accompany other diseases.

Anaemia and Its Clinical Impact

Anaemia is an important component of clinically significant disease. A fall in circulating red-cell mass may produce pale mucous membranes, weakness, poor exercise tolerance, tachycardia and increased respiratory rate. Production may decline as the animal becomes less active and consumes less feed. When anaemia becomes severe, the animal can deteriorate quickly and requires immediate veterinary evaluation,

including assessment of packed cell volume or haemoglobin where available.

Diagnosis

Diagnosis should be based on the overall clinical picture together with appropriate laboratory investigation. No single clinical sign is sufficiently specific to confirm the disease.

1. Peripheral Blood Smear

A suitably prepared and stained blood film may reveal *Theileria* piroplasms within erythrocytes. This method is comparatively inexpensive and remains useful in field-oriented diagnostic work, although its sensitivity can fall when parasitaemia is low.

2. Lymph-Node Examination

In selected cases, examination of material obtained from an enlarged lymph node can support diagnosis by demonstrating schizont stages within lymphoid cells.

3. Haematology

Complete blood examination can document anaemia and provide information on haemoglobin, packed cell volume, erythrocyte count and leukocyte changes. These results are also helpful when judging severity and planning supportive therapy.

4. Molecular Testing

PCR-based assays can detect *Theileria* DNA with high analytical sensitivity and may be particularly valuable when parasite numbers are low or when identification at species level is required.

Differential Diagnosis

Because fever, pallor, weakness and production loss are not unique to theileriosis, other haemoparasitic and systemic diseases must be considered. Depending on the clinical and epidemiological setting, differentials may include babesiosis, anaplasmosis, trypanosomiasis, leptospirosis, haemorrhagic septicaemia and other bacterial febrile illnesses, severe parasitism, and other causes of haemolytic or regenerative anaemia. Laboratory evidence is therefore important whenever the clinical picture is ambiguous.



Therapeutic Management

Treatment should begin promptly once the clinical diagnosis is sufficiently supported. The choice of therapy should take into account the suspected *Theileria* species, body weight, severity of illness, hydration, haematological findings and any concurrent disease. Veterinary supervision is important because severely affected animals may need intensive supportive care in addition to specific treatment.

1. Specific Antitheilerial Treatment

Buparvaquone is widely used for susceptible cases of tropical theileriosis. The exact dose, route, timing of repeat treatment and withdrawal period must be taken from the approved product label and current veterinary guidance rather than applied as a universal regimen. Treatment started before advanced systemic deterioration generally offers a better prospect of recovery.

2. Rehydration and Electrolyte Support

Animals with dehydration, anorexia or systemic illness may require fluid and electrolyte replacement. Fluid selection and volume should be individualized according to the estimated dehydration, cardiovascular status, renal function and documented or suspected electrolyte disturbances.

3. Addressing Anaemia

Anaemia should be quantified using clinical assessment together with PCV or haemoglobin measurement. In life-threatening cases, intensive supportive care may be necessary. Where facilities, compatible donor blood and appropriate veterinary expertise are available, transfusion may be considered for severe anaemia.

4. Nutritional Support

Sick buffaloes commonly reduce feed intake, so feed and water should be easy to access. Good-quality green fodder, suitable dry fodder, an appropriate concentrate mixture and mineral supplementation can be provided according to the animal's requirement. Clean drinking water should remain continuously available.

5. Control of Fever and Discomfort

Fever and pain may warrant symptomatic

treatment. Any antipyretic or analgesic should be selected by the attending veterinarian after considering hydration, renal function, concurrent conditions and relevant milk or meat withdrawal requirements.

6. Monitoring for Complications

Closely observe severely affected buffaloes for worsening dehydration, profound anaemia, respiratory difficulty, secondary infection, recumbency and further reduction in feed or water intake. Supportive treatment should be revised as the clinical condition changes.

Tick Control: The Central Preventive Measure

Because ixodid ticks are the principal vectors, prevention cannot depend on treatment of sick animals alone. Buffaloes should be inspected routinely, paying particular attention to the ears, dewlap, axillary area, groin, tail base, perineum and other common attachment sites. Acaricides should be selected and applied according to veterinary advice and product directions. Housing management is also important: sheds should be kept clean, cracks and crevices should be addressed, excessive vegetation around resting areas should be managed and the environment should not favour tick persistence. Combining animal-level and environmental measures is generally more dependable than relying on a single intervention.

Prevention and Herd-Level Management

Routine Tick Checks: Examine buffaloes regularly and increase surveillance when tick activity is high.

Correct Acaricide Use: Apply effective products at the recommended concentration and interval; where appropriate, rotate active ingredients to reduce selection pressure for resistance.

Quarantine of Introduced Animals: Keep newly purchased or introduced stock separate for an appropriate observation and examination period before herd integration.

Act on Suspicious Cases Early: Fever together with lymph-node enlargement, pallor, weakness or falling milk yield warrants veterinary assessment.

Limit Risky Animal Movement: Avoid unnecessary movement between areas with markedly different tick exposure.

Maintain Adequate Nutrition: Balanced feeding supports body condition and resilience during infectious challenges.

Keep Farm Records: Document tick infestation, treatments, clinical cases and previous outbreaks to identify recurring patterns and improve control planning.

Economic Importance

The financial impact of theileriosis extends beyond the immediate cost of medicines. Affected herds may experience lower milk output, weight loss, slower growth, treatment and labour expenses, reproductive problems associated with severe illness and mortality. Rapid recognition, appropriate treatment and sustained tick control can therefore protect both animal welfare and farm productivity.

Conclusion

Theileriosis should be considered when a buffalo develops fever, enlarged superficial lymph nodes, pallor, weakness and a noticeable decline in milk production, particularly where tick exposure is substantial. A combination of clinical examination, blood-smear evaluation, haematology and PCR where available can improve diagnostic confidence. Early, veterinarian-directed antitheilerial treatment supported by individualized fluid, nutritional and anaemia management can improve outcomes. At herd level, however, durable control depends on reducing tick exposure through regular inspection, appropriate acaricide use, quarantine and good housing and management practices.

References

- Uilenberg G. (1981). Theilerial species of domestic livestock. *Advances in Veterinary Science and Comparative Medicine*, 25, 3–37.
- Norval RAI, Perry BD, Young AS. (1992). *The Epidemiology of Theileriosis in Africa*. Academic Press.
- De la Fuente J, Estrada-Peña A, Venzal JM, Kocan KM, Sonenshine DE. (2008). Overview: Ticks as vectors of pathogens that cause disease in humans and animals. *Frontiers in Bioscience*, 13, 6938–6946.
- Bishop R, Musoke A, Morzaria S, Gardner M, Nene V. (2004). *Theileria: intracellular protozoan parasites of wild and domestic*

ruminants transmitted by ixodid ticks. *Parasitology*, 129(S1), S271–S283.

Uilenberg G. (1995). International collaborative research: significance of tick-borne hemoparasitic diseases to world animal health. *Veterinary Parasitology*, 57(1–3), 1