



A Monthly e Magazine
ISSN:2583-2212
May 2024 Vol.4(5), 1793-1796

Popular Article

Trypanosomosis in animals

Dr. Vikrant Sudan, Dr. Deepak Sumbria, Dr. Rabjot Kour

Department of Veterinary Parasitology,
Department of Veterinary Parasitology, College of Veterinary Science,
Guru Angad Dev Veterinary and Animal Sciences University,
Rampura Phul, Bathinda Punjab, India
<https://doi.org/10.5281/zenodo.11223597>

Abstract

Arthropod transmit various viral, bacterial and protozoal disease. Among protozoal disease Trypanosoma cause serious concern. It can infect various species of livestock such as cattle, buffalo, dog etc including human. Depending upon the animal anima, its clinical sign varies. It can lead to undulating fever, emaciation, dullness, nervous sign. Timely diagnosis and its treatment are needed to prevent productive and economic loss.

Introduction

Trypanosoma evansi elicited trypanosomosis is a widely distributed disease in Asia, Africa and South America, mainly affecting horses, camels, cattle, buffaloes and wild ruminants. The disease is also called “surra” and the word is derived from the Hindi word meaning “rotten”. Few reports of incidences of *T. evansi* in humans illustrate its significant zoonotic potential.

Transmission

It is endemic in most parts of the Indian subcontinent and is transmitted mechanically from infected carrier animals by haematophagous Dipteran insects belonging to the genera *Tabanus*, *Stomoxys*, *Haematopota*, *Lyperosia* and *Hippobosca*. Carnivorous animal also acquired the infection by ingestion of meat from infected animals. Buffaloes are known to be carrier of the disease.

Morphology of parasite

Leaf like body around 15-30 μm in length with sub-terminal kinetoplast and well-developed



undulating membrane

Pathogenesis

Anaemia can occur and is caused mainly by extravascular haemolysis through erythrophagocytosis but as the disease becomes chronic there may be decreased haemoglobin synthesis. Direct mechanical damage of RBC can also occur by the parasite. Leucopaenia and thrombocytopaenia are caused by mechanisms that predispose leucocytes and platelets to phagocytosis. Immunological mechanisms in the pathogenesis lead to extensive proliferation of activated macrophages, which engulf or destroy erythrocytes, leucocytes, platelets and haematopoietic cells.

The carcass is often pale and emaciated and there may be oedematous swellings in the lower part of the abdomen and genital organs with serous atrophy of fat. The liver, lymph nodes and spleen are enlarged and the viscera are congested. Petechial haemorrhages can be observed on lymph nodes, pericardium and intestinal mucosa. The liver is hypertrophic and congested with degeneration and necrosis of the hepatocytes, dilation of blood vessels and parenchymal infiltration of mononuclear cells. A non-suppurative myocarditis, sometimes associated with hydropericarditis, has been reported, accompanied by degeneration and necrosis of the myocardial tissue. Other lesions can include glomerulonephritis, renal tubular necrosis, non-suppurative meningoencephalomyelitis, focal poliomalacia, keratitis, ophthalmitis, orchitis, interstitial pneumonia and bone marrow atrophy. Splenic and lymph node hypertrophy occur during the acute phase but the lymphoid tissues are usually exhausted and fibrotic in the chronic stage.

Diagnosis

Clinical symptom such as undulating fever, enlargement of lymph nodes, loss of appetite, depression, nervous sign etc.

Conventional Lab diagnosis-

- Blood smear examination: Blood smear should be made followed by Giemsa staining. On examination under oil immersion objective leaf like organism can be seen
- Lymph node biopsy: Lymph node material should be aspirated by needle and smear should be made followed by examination under microscope
- Wet blood smear: Put 1-2 drop of blood on slide and observes under 10X of microscope. In positive case wave's formation can be observed.



- Haematocrit method: Blood is taken in heparinised capillary tube followed by centrifugation at 12,000 rpm for 5 min. Parasite get concentrated between buffy coat and plasma. It can detect 200 parasite/ml of blood.
- Animal inoculation: 1 ml of suspected blood is injected in mice via IP and after 15 days mice blood from tail is examined for the parasite.

Detection of parasitic DNA-

For the detection of parasite DNA many techniques are used like polymerase chain reaction (PCR), nested, semi-nested PCR, real time PCR, Loop-mediated isothermal amplification (LAMP) etc can be used. PCR is helpful to detect 0.15 parasite/ml

Serological test-

Many serological tests can be used to detect the presence of parasite such as indirect fluorescent antibody test (IFAT), enzyme-linked immunoassay (ELISA), card agglutination test (CAT) etc.

Biochemical test-

Many biochemical tests can be used to detect the presence of parasite such as stilbamide test, mercuric chloride test,

Treatment: - Diminazene aceturate @ 3.5 mg/kg; Suramin @ 2-4 gm/50 kg bw IV; iso metamidium chloride @ 0.5-1 mg/ by IM; Quinapyraminse salt (combination of sulphate and chloride)

Control

- Fly control should be done
- Infected animal should be separated form herd and treated accordingly
- Dog should not be allowed to ear raw meat of infected animal

References

Desquesnes et al. *Trypanosoma evansi* and surra: a review and perspectives on origin, history, distribution, taxonomy, morphology, hosts, and pathogenic effects. *Biomed Res Int.* 2013;2013:194176.

Desquesnes et al. *Trypanosoma evansi* and surra: a review and perspectives on transmission, epidemiology and control, impact, and zoonotic aspects. *Biomed Res Int.* 2013;2013:321237.

Sudan et al. Trypanosomosis of wild animals with emphasis on Indian scenario. *Vet Parasitol Reg Stud Reports.* 2017;10:25-28.



Sumbria et al. Equine trypanosomosis in central and western Punjab: Prevalence, haemato-biochemical response and associated risk factors. *Acta Tropica*, 138, 2014: 44-50.

Wilson RT and Dioli M. History of Trypanosomosis in the One-Humped Camel and Development of its Treatment and Cure, with Special Reference to Sudan. *Medical Research Archives*, 9, 7.

