



Prevalence of Surra (*Trypanosoma evansi* Infection) in Equines of Stud Farms of Rajasthan, India: A Regional Review

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Surra, caused by the haemoprotozoan parasite *Trypanosoma evansi*, is an important vector-borne disease of equines that can adversely affect health, performance and breeding efficiency. Rajasthan has a substantial equine population associated with stud farms, breeding establishments, equestrian activities and traditional animal husbandry. Although regional epidemiological studies have demonstrated the presence of *T. evansi* infection in equines, published prevalence data specifically from Rajasthan stud farms remain limited. A multicentre serological survey conducted in northern and northwestern India recorded antibodies against *T. evansi* in 90 of 1,148 equids sampled in Rajasthan (7.84%). Another regional investigation reported a seroprevalence of 2.85% in equines from the western dry region of Rajasthan. Differences in sampling periods, study populations and diagnostic approaches may explain the variation between estimates. Regular surveillance, vector control and confirmatory laboratory diagnosis are therefore important for effective management of surra in Rajasthan's stud farms.

Keywords: Surra, *Trypanosoma evansi*, equines, stud farms, seroprevalence, Rajasthan.

Introduction

Surra is a significant haemoprotozoan disease of domestic animals, caused by *Trypanosoma evansi*. It is transmitted predominantly by biting flies, particularly tabanids and stable flies, through mechanical transmission. Equines are susceptible to infection, which may result in fever, anaemia, progressive weight loss, weakness, oedema and reduced working capacity. Chronic and subclinical infections may remain undetected and can complicate disease control. In Rajasthan, equines are maintained for breeding, riding, sporting and other purposes. Stud farms may facilitate the movement of animals between breeding centres, exhibitions and equestrian events, potentially increasing opportunities for exposure to infected animals and mechanical vectors. Consequently, determining the prevalence of surra in these establishments is important for animal health, breeding management and farm productivity.

Prevalence of surra in Rajasthan

Yadav et al. (2013) developed an antibody-based ELISA and investigated seroprevalence in equids from northern and northwestern India. Among 1,148 equids sampled in Rajasthan, 90 were seropositive, corresponding to a seroprevalence of approximately 7.84%. This finding supports the occurrence of *T. evansi* exposure among equines in the state. In a subsequent investigation, Yadav et al. (2019) analysed 6,455 equine serum samples collected across different agroclimatic regions of India during 2011–2015. Overall, 338 samples (5.24%) were

positive for antibodies against *T. evansi*. The western dry region, including Rajasthan, recorded a seroprevalence of 2.85%. The authors also reported comparatively higher prevalence during the post-monsoon period, from September to November. These studies provide useful regional evidence; however, their estimates should not be interpreted as the current prevalence specifically in stud farms. Differences in geographical coverage, sample selection, survey periods and diagnostic methods can influence the observed prevalence. Antibody positivity also indicates exposure to the parasite and does not necessarily confirm active parasitaemia at the time of sampling.

Diagnosis and risk factors

Clinical examination alone is insufficient to confirm surra because its signs may resemble those of other infectious and non-infectious diseases. Examination of wet blood films or stained blood smears can demonstrate trypanosomes, but sensitivity may be limited in animals with low or fluctuating parasitaemia. Antibody ELISA is useful for seroepidemiological surveillance, while antigen detection and polymerase chain reaction (PCR) can provide additional evidence of infection. Singh et al. (2004), working with camels in western Rajasthan, demonstrated that PCR detected more positive animals than conventional blood-film examination. Although this study concerned camels rather than equines, it provides relevant regional evidence regarding the importance of diagnostic sensitivity in investigations of *T. evansi* infection. Potential risk factors in stud farms include seasonal abundance of biting flies, inadequate vector management, introduction of animals without health screening and movement between farms. These factors should be investigated systematically rather than assumed to be responsible for every positive case.

Prevention and control

Surveillance programmes should include representative sampling of horses, mares, foals and breeding stallions across different stud farms and seasons. Antibody ELISA may be used for screening, with PCR, antigen detection or parasitological examination selected according to the diagnostic objective and veterinary assessment. Control measures should include effective fly management, hygienic stable conditions, routine monitoring of animal health, quarantine and testing of newly introduced equines, and prompt veterinary investigation of suspected cases. Treatment should be prescribed by a qualified veterinarian following appropriate diagnosis. Farm records should document animal movement, clinical findings, laboratory results and treatment outcomes.

Conclusion

Available epidemiological studies confirm that *Trypanosoma evansi* exposure occurs among equines in Rajasthan, with published regional estimates varying according to the study population and methodology. Nevertheless, the exact prevalence of surra in Rajasthan's stud farms cannot be established from these regional estimates alone. A dedicated, representative and seasonally repeated survey using validated serological and molecular diagnostic methods is required to establish farm-specific prevalence and identify associated risk factors. Such evidence would support targeted surveillance and sustainable disease-control strategies in the state's equine breeding establishments.

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