



## Case Report

### Diagnosis and treatment of Trypanosomiasis (Surra) in a bulldog pup (A Case Report)

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#### ARTICLE INFO

ARTICLE HISTORY: CVJ-23-0304

Received 12 March 2023  
Revised 24 May 2023  
Accepted 27 May 2023  
Published 30 May 2023  
online

#### Keywords:

Surra in bulldog  
Melarsomine  
Manganese chloride

#### ABSTRACT

*Trypanosoma evansi* (surra) is a salivarian blood parasite that mainly affects camels, dogs and equines. The condition could be lethal if it is not diagnosed and treated. In the present investigation, a five-month-old bulldog pup was diagnosed with surra. The pup was treated with melarsomine @ 0.25 mg/kg body weight through deep intramuscular route, liver tonic and Oral feeding of Manganese chloride @ 10 mg/kg b.wt. in 10 ml of water daily for 5 days. The condition was subsite on day 3<sup>rd</sup> post-treatment and confirmed on day 7<sup>th</sup>. All in all, melarsomine combination with Manganese chloride is effective and safe to treat the surra in bulldog pup.

To Cite This Article: Muhammad G, S Faryal, M Saqib and I Rasheed, 2023. Diagnosis and treatment of Trypanosomiasis (Surra) in a bulldog pup (A Case Report). Continental Vet J, 3(1):96-98.

#### Introduction

*Trypanosoma evansi* is the most prevalent pathogenic salivarian blood protozoa in animals. It is responsible for a disease called surra. The vector of this protozoa is blood-sucking flies. It also comprised a wide host range including domestic and wild animals (OIE, 1996). Surra in the dog is marked by fever, anorexia, edema of the head and throat, corneal opacity and even blindness), edema of the larynx, and change in the voice of the dog which can be confused with that in rabies. The parasitemia fluctuates with the temperature of the host and parasites abound during paroxysms. The course is more serious in pups than that in adult dogs (Ruprah, 1985). The development of new trypanosomicidal drugs has been pathetically slow as evidenced by the introduction of only 1-2 new drugs over the past two decades. It follows that the currently available drugs must be exploited to the best of their potential (Touratier, 1990). Trypanosomes are transmitted to animals mainly through insects, like Liperosia, Tabanus, and

Stomoxys. These insects go through a biological cycle. Trypanosome is a parasite which present in tropical and subtropical areas, it also increases the growth of disease in the blood of targeted animals (Rodriguez et al. 2012; Elhaige et al. 2013). Earlier research work tells about the infections of different types of trypanosomal infection in buffalo (Shahzad et al. 2012; Ponnudurai et al. 2015; Desquesnes et al. 2016; Shahzad et al.,2010), camels (Tehseen et al. 2015; Tehseen et al. 2015), dogs (Silva et al. 1995; Defontis et al. 2012), deers (Adrian et al. 2010), horses (Tehseen et al. 2015; Rodrigues et al. 2009) and cattle (Tuntasuvan et al. 1997) and Buffaloes (Hussain et al. 2018).

#### Case history

On October 10, 2022, a 5-month-old male bulldog pup weighing about 13 kg was presented to the Veterinary Teaching Hospital, Department of Clinical Medicine and Surgery, University of Agriculture, Faisalabad, Pakistan. The presenting complaint included episodes of recurrent fever for the last month, inappetence, and considerable

weight loss. Before referral, the subject had been treated with various antibiotics, antipyretics and restoratives but the condition remained nonresponsive. Clinical examination revealed a moderate fever (103.4°F), an accelerated pulse (140 beats/min) and a respiration rate (45/min). The mucous membranes were anemic. The urine was concentrated and feces were slightly pasty. Eyes were watery. Capillary refill time as noted from the gingival mucous membrane was 3 seconds. Fecal examination was negative for edoparasites. The pup had a moderate tick infestation. Examination of wet blood films revealed an astronomical number of motile trypanosomes. Microscopic examination of thin blood smears stained with Dip Quick Stain (Jorgensen Labs. Loveland, Colorado, USA) revealed a large number of trypanosomes with characteristic flagellum, kinetoplast and undulating membrane. Based on clinical examination and demonstration of trypanosomes in wet blood films and Dip Quickly stained peripheral blood smears, the subject pup was diagnosed as suffering from surra (*Trypanosoma evansi* infection). The pup cohabited with a donkey and two buffaloes in the house of the owner. These animals, however, tested negative for trypanosomes. Microscopic examination of a squashed preparation of engorged ticks also demonstrated the presence of trypanosomes. The following treatment was instituted:

- a) Inj. Cymelarsan® (Merial, France; active ingredient = melarsomine) @ 0.25 mg/kg b.wt. deep IM BID after dissolving in 5 ml of distilled water.
- b) Inj. Jetepar® (Popular Chemical Works Pvt. Ltd. Pakistan; each 10 ml ampule contains 750 mg of betaine glucuronate, 200 mg of diethanolamine glucuronate and 41 mg of nicotinamide) 5 ml slow IV in 500ml dextrose (5%) normal saline drip daily for 2 days.
- c) Oral feeding of Manganese chloride (BDH Chemicals, UK) @ 10 mg/kg b.wt. in 10 ml of water daily for 5 days.

Microscopic examination of wet blood films and thin blood smears stained with Dip Quick stain were found negative on day 3 and day 7 post treatments. In dogs, surra usually follows an acute course (Gill, 1991; Ravindran *et al.*, 2008). According to Herbert and Lumsden (1976), microscopic detection of trypanosomes is not possible when their number is <2500,000 per ml of blood. Detection of trypanosomes on microscopic examination of wet blood films and Dip Quick stained peripheral blood smears is, therefore, reflective of an astronomical number of trypanosomes in a miniscule volume of blood. Although in dogs, the disease is usually sporadic, outbreaks of surra have been reported in India (Arora and Pathak, 1995; Balakrishnan *et al.* 1994; Varshney *et al.* 2003).

The demonstration of trypanosomes in the squashed preparation of blood-engorged ticks in the present report is suggestive of the role of ticks

in the transmission of *T. evansi* infection in dogs. Dogs may contract *T. evansi* infection even by eating the meat of infected animals (Hoare, 1972). Edema of head or throat, corneal opacity/blindness and a change in the voice were absent in the subject of the present report. Other signs (recurrent fever, lacrimation, increase in pulse and respiration rate, diarrhea and loss of body weight) are, however, consistent with those reported by Gunaseelan *et al.* (2009). Diminazene aceturate is contraindicated in camel and a low tolerance has been observed in dogs (Losos, 1986). This prompted us to treat the pup with melarsomine which was found effective and safe. Oral manganese chloride supplementation in rats has been found to delay the onset of trypanositemia and reduce the severity of trypanosome-associated parasitemia and anemia (Egbe-Nwiyi *et al.* 2005). Awolaja *et al.* (1997) reported higher plasma/serum and erythrocytes manganese levels in trypanotolerant keteku than in trypanosusceptible white Fulani breed of cattle. Since only a solitary pup was treated with MnCl<sub>2</sub> in the present report, it is not appropriate to conclude anything about the real therapeutic worth of manganese chloride in the therapy of *T. evansi* infection.

#### Conclusion

Melarsomine combined with Manganese chloride is effective and safe to treat the surra in dogs.

#### Authors contribution

GM made a substantial contribution to this study; SF wrote this manuscript; MS investigated this study; IR wrote and corresponding author.

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