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A clinical study of equine trypanosomosis in Kerala

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Abstract
This study was done on three female Marwari horses 3, 4 and 5 years old from Pookkottur, Areekode and Mankada (Case no. 1, 2 and 3 respectively) in Malappuram district of Kerala. The mares showed inappetance, lethargy, weight loss, scanty and watery faeces, yellowish discoloration of urine and hind limb weakness. Physical examination was carried out and blood samples were collected for laboratory investigation. Clinical examination revealed, all the animals were debilitated with pale and moist mucous membrane, pyrexia, prolonged capillary refill time, tachypnoea and tachycardia. Laboratory investigation revealed the presence of *Trypanosoma* sp. in all the three cases. Haematological examination revealed low Haemoglobin, Packed Cell Volume and Total Erythrocyte Count. The treatment was done using Diminazine aceturate (7 mg/kg bodyweight, intramuscular), two doses in 7 days interval. A screening done after a week revealed all mares were free from parasite. All mares had an uneventful recovery.

Keywords: Inappetance, lethargy, pyrexia, trypanosoma, anaemia, diminazine aceturate

Introduction
Trypanosomosis or surra, caused by *Trypanosoma evansi*, is one of the most important haemoprotozoan infections of the horses. The livestock all over India particularly in Rajasthan, Haryana, Punjab, Madhya Pradesh, Uttar Pradesh, Maharashtra, Tamil Nadu, Kerala and Andhra Pradesh have been reported to suffer from *Trypanosoma evansi* infection. *T. evansi* is transmitted mechanically by biting flies, particularly of the genus *Tabanus. Lyperosia*, *Stomoxys* and *Haematopota sp.* can also transmit the disease. The incidence and the severity of disease vary in different localities according to the strain of *T. evansi.* In the Indian subcontinent, an increase in surra has been associated with monsoon months, reaching the climax in October and November when the fly breeding is at its highest. Period of incubation is variable and depends upon the intensity of infection and the species and health of the animal. Symptoms usually appear 1-2 weeks after the infection [1]. Generally, the disease is diagnosed based on the clinical evidences augmented with some parasitological or serological tests. However, the clinical signs like emaciation, fever, anaemia, lacrimation, corneal opacity and diarrhoea are not sufficient for diagnosis [2]. The present case report describes trypanosomosis in three Marwari horses in Malappuram district of Kerala. All the animals in the study were bought from Perinthalmanna and underwent equestrian training in a common centre at Angadipuram, Malappuram. All three horses were treated using diminazine aceturate and had uneventful recovery.

Materials and Methods
Three female Marwari horses, 3, 4 and 5 years old bought from the same place and who underwent equestrian training from same centre formed the basis for the study. All the mares showed inappetance, loss of body condition and lethargy. In addition to these signs, Case no. 3 showed symptoms such as scanty and watery faeces with pieces of stone, yellowish discoloration of urine and hind limb weakness. Physiological parameters, clinical examination, haematology and serum biochemistry was carried out for diagnosis. A faecal sample examination was carried out additionally in Case no.3.

Results and Discussion
Clinical investigation revealed the animals were debilitated (Fig.1) with pale and moist mucous membrane, pyrexia, prolonged capillary refill time, tachypnoea and tachycardia.

For microscopic parasitological diagnosis, the most common biological fluid examined is blood, but parasites may be detected in lymph aspirated from superficial lymph nodes, cerebrospinal fluid, milk and vaginal or preputial discharges [3]. Blood smears were made from ear tip and stained with Giemsa stain in 1 in 10 dilution for 45 minutes. Microscopic examination under oil immersion objective revealed *Trypanosoma sp.* (++, +, +++) as shown in Fig 2. Haematological examination depicts low Hb, PCV and TEC (Table 1). Important biochemical parameters like total serum protein, albumin, globulin, SGOT, SGPT, BUN, Creatinine were found to be in the normal ranges. Microscopic examination of faecal sample in Case no.3 could not detect the presence of ova of any parasites. All three animals were treated with Diminazine aceturate @ 7 mg/kg bodyweight, two doses at 7 days interval deep IM route. The supportive treatment was done with Vitamin B1, B6 and B12 injection 5ml deep IM route for 7 days. Haematinic mixture and mineral mixture were given orally, 30g daily in feed for one month. Animals started responding to the treatment the very next day itself and gradual improvement was noticed in the feed intake. The temperature had dropped to normal and tachycardia and tachypnoea subsided slowly in all three cases. A screening was carried out after one week and the animals were found to be free from the parasite. A decrease in TEC, Hb and PCV indicative of anaemia was observed which may be due to several factors, commonest among them being erythrocyte injury caused by lashing action of trypanosome flagella, undulating pyrexia, platelet aggregation, toxins and metabolites from trypanosomes, lipid peroxidation and malnutrition [4]. Compensatory tachycardia and tachypnoea have been reported in infected horses. In the present study, WBC have not shown a defined trend and most studies on equine disease demonstrates normal total serum protein concentration [5]. Case no. 3 in this study shows hind limb weakness. *T. evansi* induces a wasting disease with a protracted clinical course associated with anemia and instability (wobbling) of pelvic limbs in horses [6]. Vaccines against trypanosomosis do not exist. Chemotherapy of equine trypanosomosis consists of treatment with diminazine diaceturate, isometamidium chloride, quinapyramine choride/quinapyramine sulphate combination, suramin or melarsomine hydrochloride [3]. Diminazine aceturate was the drug used for treatment in all three cases in the present study. Two or three doses of the drug may increase the amount of molecules that go beyond the blood brain barrier, an area of refuge during the period of action of this drug which is an average of 21 days [7].

Fig 1: 5 year old debilitated mare from Mankada (Case no. 3)

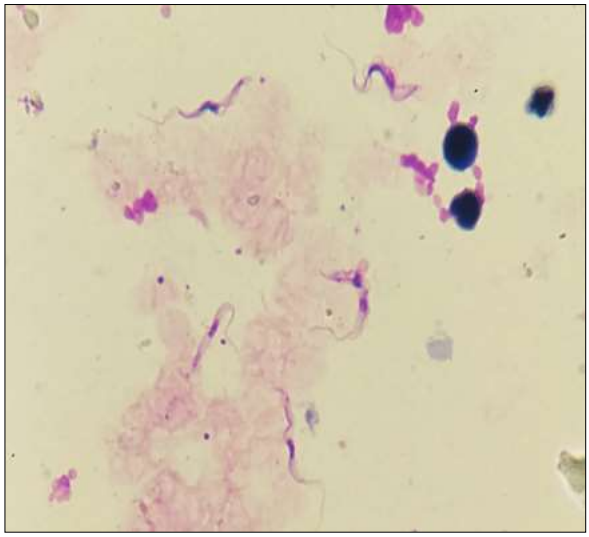

Fig 2: *Trypanosoma sp.* in Giemsa stained blood smear under 100X digitally magnified

Table 1: Haematological Observations

Haematological Parameters	Case No. 1	Case No. 2	Case No. 3	Reference Ranges
TEC(millions/microliter)	4.76	4.18	2.42	6-12
Hb(g/dl)	9.3	6.3	5.5	10-18
PCV (%)	30.2	19.5	15.4	32-48
MCV(fL)	63.6	46.7	63.9	34-58
MCH(pg)	19.5	15	29.7	13-19
MCHC(g/dL)	30.7	32.3	35.7	31-37
WBC(thousands/microliter)	11.1	10	10.8	6-12
Lymphocytes(thousands/microliter)	5	3.8	4.2	1.5-5
Monocytes(thousands/microliter)	0.5	0.6	0.5	0-0.6
Neutrophils(thousands/microliter)	5.2	3.8	4.8	3-6

Conclusion

The present clinical study was done from Malappuram district of Kerala where the climate is generally mild hot and humid in nature. All three animals in the study underwent equestrian training at a common centre in Malappuram during the monsoon season which highly accelerates vector fly breeding. All animals developed the infection over the same period of time with similar symptoms. The animals were treated using Diminazine aceturate and had an uneventful recovery.

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