

Haemato-biochemical studies of Camels infested with Trypanosomiasis

K. Padmaja

Department of Clinical Veterinary Medicine,
College of Veterinary Science, Rajendranagar, Hyderabad-500 030, Andhra Pradesh, India
E-mail: satyaja35@yahoo.co.in
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Abstract

Aim: To know the Haemato-Biochemical values of camels infested with Trypanosomiasis.

Materials and Methods: A herd of 13 camels showing signs of inappetance, lethargy, going down in condition, urticarial swellings, oedema of pads and occasional shivering were examined. Blood samples were collected to screen for the trypanosomes and to record hemato-biochemical alterations. Treatment of both group I and group II was undertaken.

Results: Nine camels were positive for Trypanosomes recording an incidence of 69.23%. A significant ($P<0.01$) increase in temperature and decrease in TEC was observed, while a significant ($P<0.05$) increase in TLC, neutrophils and eosinophils and significant ($P<0.05$) decrease in lymphocytes was noted in positive blood samples. Significant ($P<0.05$) decrease in blood glucose levels was recorded and one camel died due to hypoglycemic encephalopathy. Trypanosomiasis was treated successfully with Quinapyramine salts.

Keywords: Biochemical, Camels, Hematological, Incidence, Therapy, Trypanosomiasis,

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Introduction

Trypanosomiasis (surra) is a chronic disease in camels and characterized by remittent fever, anaemia and cachexia [1]. It is caused by flagellate protozoan, *Trypanosoma evansi* and mechanically transmitted by biting flies such as Tabanus, Stomoxys and Liperosia [2]. *Trypanosoma evansi* is the most widely distributed pathogenic animal trypanosome, affecting domesticated livestock in Asia, Africa, Central and South America and Europe [3]. It causes a widely prevalent serious disease of domestic and wild animals which is of considerable economic importance in the Indian subcontinent [4] and South Asian countries [5]. An acute form characterized by persistent fever with trypanosomes always demonstrable in peripheral blood circulation and ending fatally after a few weeks [6]. In Hyderabad, where the present work was undertaken, the camel population is very less. A few camels are reared in the city for joy rides and ceremonial processions.

In the present investigation, a herd of 13 camels showing signs of inappetance, lethargy, going down in condition, urticarial swellings, oedema of pads and occasional shivering were studied with an objective of screening for trypanosomes and haemato-biochemical alterations.

Materials and Methods

The herd of 13 camels was examined for clinical signs and temperatures were recorded. To screen for the presence of trypanosomes and to study haemato-biochemical alterations, blood was collected from jugular vein as per International Animal Ethics Committee Guideline. Wet smears were collected and screened under high power for the presence of trypanosomes [7]. Whole blood was collected in the vials containing Ethylene diamine tetra acetic acid (EDTA) and without anti coagulant for haematological and blood glucose estimation respectively. Camels were divided into two groups. Group I positive for trypanosomes and group II negative for trypanosomes.

The total erythrocyte count (TEC), total leucocyte count (TLC), haemoglobin (Hb), packed cell volume (PCV) and differential leucocyte count (DLC) were estimated as per the methods described by Schalm *et al.* [8]. The glucose levels were estimated immediately as per the method of Folin and Wu [9]. The haemato-biochemical alterations of both the groups were statistically analyzed by employing 't' test [10].

Therapy was instituted with quinapyramine prosalt @ 5 mg/kg b wt and 2.5 mg/kg b. wt subcutaneously single dose in group I and group II

Table-1. Mean clinical and hemato-biochemical values of camels

Sr. No.	Parameter	Normal values	Group I (Positive for Tryps)	Group II (Negative for Tryps)
1	Temp (°F)	99.00±1.0	102.7 ± 0.56**	99.5 ± 0.32
2	TEC (10 ³ cmm)	7.20±0.08	4.4 ± 0.34**	7.0 ± 0.26
3	TLC (10 ³ cmm)	12.50±0.88	20.4 ± 0.70*	15.4 ± 1.82
4	Hb (gm %)	13.20±0.81	8.6 ± 0.31*	10.3 ± 0.63
5	PCV	43.00±1.10	25.6 ± 1.09*	32.5 ± 2.63
6	Neutrophils	30.57±1.16	41.8 ± 2.04*	34.3 ± 1.31
7	Lymphocytes	63.00±2.12	42.7 ± 3.31*	53.0 ± 3.14
8	Monocytes	2.40±0.32	4.2 ± 0.46	4.8 ± 0.48
9	Eosinophils	2.20±0.04	8.9 ± 1.37*	4.3 ± 1.31
10	Basophils	0.70±0.01	1.3 ± 0.37	1.3 ± 0.25
11	Blood Glucose (gm/dL)	80.00±2.22	63.6 ± 5.72*	82.0 ± 2.16

**P < 0.01

* P < 0.05

animals, respectively. Supportive therapy was undertaken with 20% dextrose, 1000 ml, intravenous for two days and Inj. B-Complex with liver extract, 15 ml, intramuscularly for 3 days in group I animals, while group II animals received Inj. B-complex with liver extract, 15 ml, intramuscularly for 3 days.

Results and Discussion

The herd improved and returned to normal health within a week after treatment.

The herd of 13 camels showed the clinical signs of inappetence, lethargy, going down in condition, urticarial swellings, oedema of pads, abdomen and sheaths with occasional shivering. Similar signs were reported by Mottelib *et al.* [11] in camels suffering with trypanosomiasis. Out of 13 camels examined, 9 were positive for trypanosomes (group I) and 4 animals were negative (group II) on wet smear examination, recording an incidence of 69.23% as against 14.28% recorded by Mahajan [12] in Hyderabad state. While an incidence of 7.50%, 10.67% and 13.72% were reported by Pathak [13], Chaudhary and Iqbal [14] and Shah *et al.* [15] respectively. Camel acts as a carrier with frequent crises and parasitemia denotes acute infection of the disease [11].

Group I animals recorded a significant (P<0.01) increase in temperature and significant (P<0.01) decrease of TEC. A significant (P<0.05) decrease of Hb and PCV in positive animals was recorded which indicated anaemia (Table 1) which can be attributed to haemolytic factor produced by trypanosomes [6]. The present findings are in accordance with Derakhshanfar, *et al* [16].

Leucogram showed a significant (P<0.05) decrease of lymphocytes indicating immune suppression [14] as against lymphocytosis indicating chronic infection was reported by Derakhshanfar, *et al* [16]. A significant (P<0.05) increase in TLC, neutrophils and

eosinophils was observed. These changes can be attributed to an increase in the activity of the mononuclear phagocytic system. The eosinophilia observed is a feature of parasitic infections and is associated with immediate type hyper sensitivity reactions [6]. However, an insignificant decrease and increase in TEC, Hb, PCV, leucogram and neutrophils respectively, was recorded while a significant increase in eosinophils was reported by Ahmad *et al* [17] in haemoparasitized camels.

Group I animals showed significant (P<0.05) decrease in blood glucose and one animal died showing signs of circling, head pressing and convulsions with blood glucose of 20 mg/ 100 ml. The nervous signs in camel can be attributed to hypoglycemic encephalopathy. Hypoglycemia can be attributed to malfunction of adrenals, pancreas and thyroid glands [18].

Camel trypanosomiasis is a disease of major economic importance and control is limited to treating those animals that are considered to be infected on the basis of clinical signs and wet blood smears and prophylactic therapy to the rest of the herd.

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Competing interests

The authors declare that they have no competing interests.

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