ECRONICON OPEN ACCESS

EC VETERINARY SCIENCE
Research Article

Prevalence of Haemoparasites of Camels (*Camelus dromedarius*) in Thal Desert Pakistan in Winter

Muzaffar Ghafoor[1], Farrah Deeba[1], Anas Sarwar Qureshi[2]*, Qamar-un-Nisa[3]

[1]*Department of Clinical Medicine and Surgery, University of Agriculture Faisalabad, Faisalabad, Pakistan*

[2]*Department of Anatomy, University of Agriculture Faisalabad, Faisalabad, Pakistan*

[3]*Department of Pathology, University of Veterinary and Animal Science, Lahore, Pakistan*

***Corresponding Author:** Anas Sarwar Qureshi, Department of Anatomy, University of Agriculture Faisalabad, Faisalabad, Pakistan.

Received: August 08, 2018; **Published:** October 05, 2018

Abstract

The study was carried out to determine prevalence and significance of trypanosomes infection in camels (*Camelus dromedarius*) from District Bhakkar. A total of 150 blood samples were collected from jugular vein and ear vein of camels. The presence of hemoparasites in the blood samples were analyzed by applying Diff-Quick® staining method. Prevalence of *Trypanosoma evansi* was recorded as 10.6% in camels. No other hemoparasite was detected during study. Haemoparasites prevalence was more in adult camels (15.00%) than young ones (11.11%) than < 1 year of age (4.44%). The higher percentage of the disease positive cases was found in males (13.8%) than females (8.20%). Statistical analysis showed significant difference ($P < 0.05$) between hematological values (PCV) of non-infected and infected camels. There is a need for further study on distribution and seasonality of Trypanosomes infection and its vectors in order to establish control measures in affected herds and prevent dissemination of the disease.

Keywords: *Trypanosoma evansi; Prevalence; Camels; Winter*

Introduction

Camel (*Camelus dromedarius*) is a multipurpose animal of semi-arid and arid areas kept for a variety of purposes e.g. milk, meat, wool, transported racing and agriculture work. No other domestic animal is able to provide as many variable services to human [1]. Camel is comparatively less susceptible to many of the devastating diseases that affect other livestock species, such as rinderpest, contagious pleuropneumonia and foot and mouth disease but yet they are affected by many other diseases. The most important disease of camel is Trypanosomiasis, vector born protozoal disease caused by *Trypanosoma evansi* parasite with wide distribution throughout tropical and subtropical regions of the world [2]. Camel trypanosomosis is caused by a hemoflagellate parasite *Trypanosoma evansi*. The parasite is mechanically transmitted by biting insects *Tabanus* and *Stomoxys*. Camel trypanosomosis is one of the main causes of camel infectious abortion as reported in many studies [3]. Camel trypanosomosis cause severe irreversible testicular degeneration in males. The trypanosomosis is responsible for significant reductions in the number of red blood cells (RBC), hemoglobin and packed cell volume (PCV) as studied by Chaudhary and Iqbal [4].

Haemoparasites put negative effect on health, production, reproduction and draught power of camels [5]. Camel trypanosomiasis, also known as surra, its causative agent is by *Trypanosoma evansi*. The disease is causing severe economic losses in terms of morbidity and death. 30.0% morbidity and 3.0% mortality was found in camels due to trypanosomiasis [6,7]. Camel trypanosomiasis causes anorexia, edema (eyelids, brisket, underbelly), rough coat, anemia and weakness and emaciation that lead to low milk and meat yield, poor traction power, increased abortion and death rate [2].

This present study therefore aimed to determine the current status of prevalence of trypanosomiasis in camels.

Materials and Methods

Animals and blood smears

A total of 150 camels (*Camelus dromedarius*) of either sex were selected randomly from Camel Breeding and Research Institute Rakh-Mahni, Bhakkar and surrounding localities of farm without any distinction of diseased or non-diseased animals. Animals were divided into three age-groups first group < 1 year, second group 2 - 3 years and third group > 4 years.

Under aseptic measures 5 ml of blood was withdrawn with the help of disposable syringe and transferred to a sterile clean test tube containing an anticoagulant, EDTA (ethylene diamine tetra acetic acid) slowly to avoid hemolysis. Two blood films were prepared from fresh peripheral blood of each sampled camel. Smears were air dried then fixed in methanol. Diff-Quick® Stain was used to determine the presence of haemoparasites in the blood. The smears were examined at 100X magnification (oil immersion) on a Nikon microscope.

Blood from each sample was introduced into a plain glass microhaematocrit tube, one end of the tube was sealed, and the tubes were spun for 5 minutes at 13000 × g in a Microhaematocrit centrifuge. Packed Cell Volume (PCV) was measured using a haematocrit reader.

Statistical Analysis

The data generated for hematological values is analyzed by using Analysis of Variance (ANOVA) model with the help of SPSS software while Multiple Logistic Regression is used to compare prevalence among different age groups and sex.

Results and Discussion

Prevalence of *Trypanosoma evansi* was recorded as 10.6Fig% in camels in district Bhakkar, Punjab (Table 1). Data revealed that the hemoparasites prevalence was more in adults (> 4 years) > young (2 - 3 years) > sucklers (< 1year of age). The highest percentage of the disease positive cases was found in nomadic camels (18%) as compared to farm animals (7%). The prevalence in the current study is lower than the findings by previous workers who reported a prevalence of 18.22% in Delo-Mena District, Southwest Ethiopia by Basaznew., *et al*. [5], 21% in eastern Ethiopia by Zeleke and Bekele (2001), and 28% in Kenya by Njiru., *et al* [7]. This type of discrepancy might be attributed to firstly, variations in the ecology of the study areas and seasons of the year when the studies were conducted which have a direct effect on the distribution of biting flies responsible for the mechanical transmission of *Trypanosoma evansi.* Secondly, although blood smears are useful and convenient diagnostic methods for direct observation of trypanosomes and used by veterinarians as confirmatory tool but less sensitive than immunoassays as used by different workers [8,9].

Determinant	Level	No. Animals observed	No. Positive	Prevalence (%)	Odds Ratio	P Value
Sex	Male	65	9	13.84	1.68	0.365
	Female	85	7	8.24	-	-
Age	> 4 years	60	9	15	3.38	0.156
	1 - 4 Years	45	5	11.11	2.50	0.348
	< 1 Year	45	2	4.44	-	-

Table 1: *Prevalence of Trypanosoma evansi with respect to sex and age in camels (Camelus dromedarius).*

Sex wise prevalence is more in male camels (13.8%) than female camels (8.20%) with overall prevalence (10.6%) as shown in table 1. The higher prevalence male camels might be due to heavy stress through their use for transportation of goods from one place to another and secondly may be due to poor management [10].

The analysis of variance between infected and non-infected groups revealed statistically significant difference for hematological parameters ($P < 0.05$) as shown in table 2. The effect of Trypanosomes on PCV was marked suggesting the possible effect of the parasite on the red blood cells leading to hemolysis [11,12].

Parameters	Avg. positive ± SE	Avg. negative ± SE	P value
Hemoglobin (g/dl)	8.46 ± 0.825	11.78 ± 0.566	0.000
Packed Cell Volume (%)	22.12 ± 0.374	29.25 ± 0.134	0.000
Total Erythrocyte Count (10^6/µl)	4.79 ± 0.216	7.25 ± 0.078	0.000

Table 2: *Comparative hematological values of infected and non-infected camels (Camelus dromedarius).*

Conclusion

From the present study it has been concluded that there is very low prevalence of *Trypanosoma evansi* in the study area. Nomadic animals were more prone to disease as compared to farmed animals that might be due to lack of deworming or poor managemental conditions. There is a need for further study on distribution and seasonality of Trypanosomes infection and its vectors in order to establish control measures in affected herds and prevent dissemination of the disease.

Bibliography

1. Faye B. "The Camel, new challenges for a sustainable development". *Tropical Animal Health and Production* 48.4 (2016): 689-692.

2. Jilo K., *et al*. "Camel trypanosomiasis: A review on past and recent research in Africa and Middle East". *American-Eurasian Journal of Scientific Research* 12.1 (2017): 13-20.

3. Al-Qarawi AA., *et al*. "Trypanosomiasis-induced infertility in dromedary (*Camelus dromedarius*) bulls: Changes in plasma steroids concentration and semen characteristics". *Animal Reproduction Science* 84.1-2 (2004): 73-82.

4. Chaudhary ZI and Iqbal J. "Incidence, biochemical and hematological alterations induced by natural trypanosomosis in racing dromedary camels". *Acta Tropica* 77.2 (2000): 209-213.

5. Basaznew B., *et al*. "Trypanomosis in camel (*Camelus dromedaries*) in Delo-Mena district. Bale Zone, Oromia Region, Southwest Ethiopia". *Acta Parasitologica* 3 (2012): 12-15.

6. Ngerenwa JJ., *et al*. "Pathogenesis of *Trypanosoma evansi* in small east African goats". *Research in Veterinary Science* 54.3 (1993): 283-289.

7. Njiru ZK., *et al*. "Trypanosomosis and helminthosis in camels: comparison of ranch and traditional camel management systems in Kenya". *Journal of Camel Practice and Research* 34 (2002): 183-186.

8. Nahla OMA., *et al*. "Molecular diagnosis of *Trypanosoma evansi* infection in camelus dromedaries from Eastern and Western regions of the Sudan". *Emirates Journal of Food and Agriculture* 23.4 (2011): 320-329.

9. Eyob E and L Matios. "Review on camel Trypanosomiasis (Surra) due to *Trypanosoma evansi*: Epidemiology and host response". *Journal of Veterinary Medicine and Animal Health* 5.12 (2013): 334-343.

10. Shah SR., *et al*. "Trypanosomes infection in camels-Short Communication". *Pakistan Veterinary Journal* 24.4 (2004): 209-210.

11. Benjamin MM. "Outline of Veterinary Clinical Pathology, 3rd edition". Iowa State Univ. Press, Ames, Iowa, USA (1978).

12. Radostits OM., *et al*. "Veterinary medicine: A textbook of diseases of cattle, sheep, pig, goat and horse". 8th edition. Philadelphia, USA: WB Saunders (1997): 1537.

Volume 3 Issue 1 October 2018