HAEMOPARASITES OF CAMELS *(Camelus dromedarius)* IN MAIDUGURI, NIGERIA

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ABSTRACT

A study was conducted to determine the prevalence and significance of haemoparasite of camels slaughtered in Maiduguri abattoir. Blood samples were collected aseptically from camels before slaughter noting age and sex of animals. The samples were processed for packed cell volume (PCV) and thin smear stained with Geimsa stain according to standard procedure. An overall prevalence of 14.2 % (n = 16) of the 113 animals examined was recorded in this study. Theileria camellensis was most prevalent (n = 9 or 8.0 %) followed by Trypanosoma evansi (n = 4 or 3.5 %) and mix infection with both T. evansi and T. camellensis (n = 3 or 2.7 %). There was no significant difference (P>0.05) between male and female camels, however, there was significant difference between young and adult camels (P < 0.05) using student t-test at 95 % confidence interval. All the parasites seen in this study significantly (P < 0.01) affected the packed cell volume of the animals when compared to PCV of non infected animals. The haemogram shows marked macrocytic normochromic cells. Further work on the pathogenesis and effects of haemoparasites of camel is required. This is the first report of haemoparasites of camel in this region of Nigeria.

Keywords: Prevalence, Haemoparasite, *Theileria camellensis, Trypanosoma evansi,* Camel, Abattoir, Tropics

INTRODUCTION

The national camel population has been estimated at 92,494 as at 2000 (Felsner, 2002). Recently there has been a steady increase in the number of camels slaughtered for meat in Maiduguri and other cities in the region due to increasing cost of cattle and the decline in other livestock species. Daily 16- 25 camels are being slaughtered at the Maiduguri central abattoir (MANR, 2002). The camel's ability to utilize the scanty fodder resources of the arid zones of the world for body maintenance, growth and milk production makes this animal a potentially important source of food (Shalash, 1979; Squires, 1979). There is the need to improve the management practice of camels for maximum productivity (Knoess, 1977). Gastrointestinal and blood parasites are known to affect the health of camels leading to anemia, wasting and death in heavy infection (Jorgen and Brian, 1990). Mahran (2004) reported a prevalence of 21.1 % of blood parasites in camels in Egypt. There is paucity of information on haemoparasites of camels and their significance on health and productivity in Nigeria. This study was undertaken to determine the prevalence of haemoparasites of camels slaughtered in Maiduguri, Borno state in the semi-arid region of Nigeria.

MATERIALS AND METHODS

Maiduguri is the capital of Borno state, the most north-easterly state in Nigeria, with an area of 69,435 sq. km. It lies between latitude 10°N and 13°N and longitude 12° and 15°. Mean day temperature is 38°C. Relative humidity is generally low throughout the State, ranging from as low as 13 % in the driest months of February and March to the highest values of 70 to 80 % in the rainy season months of July and August. The rainy season lasts for less than eighty days in the extreme north; the mean annual rainfall is about 600 mm or less than 500 mm in the extreme north around Lake Chad. Droughts are endemic and rainfall tends to have been in decline since the 1960s. The semiarid nature of the Sahel and northern Sudan savannah consist mainly of open acacia tree vegetation which can no longer support the livestock population of the state. There is increase in camel raring in this region to meet up with the increasing animal protein need in the area.

Blood samples were collected aseptically from camels before slaughter in the mornings in Ethylene Diamine Tetra-acetic Acid (EDTA) tubes and transported to the laboratory on ice. Blood from each sample was introduced into a plain glass microhaematocrit tube, one end of the tube was sealed using plasticin, and the tubes were spun for 5 min at 13000 × *g* in a Microhaematocrit centrifuge (Hawksley). Packed Cell Volume (PCV) was measured using a haematocrit reader (Hawksley) and the buffy coat was examined for motile blood parasites. A thin blood smear was prepared from each blood sample, air-dried, fixed in methanol for 2 – 3 min, stained in 5 % Giemsa stain with added Azur II (2 g/l of undiluted stain) and rinsed in buffered water.

The smears were examined at ×100 magnification (oil immersion) on a Nikon microscope; at least 50 fields were searched per slide. Presence of haemoparasites was recorded; identification was carried out to genus and species level.

RESULTS AND DISCUSSION

Sixteen (14.2 %) of the 113 camels examined were positive for blood parasites. Of these animals 4(3.5 %) were positive for *T. evansi*, 9 (8.0 %) for *T. camellensis* and 3(2.7 %) had mixed infection of *T. evansi* and *T. camellensis.* 11(28.9 %) of the 38 young camels were positive with only 5(6.7 %) of 75 adult camels (Table 1). Nine (13.2 %) of the 68 males and 7(15.6 %) of the 45 females were positive (Table 1). The packed cell volume (PCV) ranges from 09 %-43 %. All animals positive for blood parasites have PCV values less than 20 %. There is a significant difference (P<0.05) between PCV of none infected and infected camels using students t-test at 95 confidence interval (Table 2). Hemogram of infected animals reveals marked macrocytic normochromic anaemia.

Table 1: Prevalence of Haemoparasites of Camels According to Sex and Age Group

Parameters	Age		Sex		Total
	Adult	Young	Male	Female	
Number examined	75	38	68	45	113
Number positive	5	11	9	7	16
Percent	6.7	28.9	13.2	15.6	14.2
T. evansi	1	3	3	1	4
T. camellensis	3	6	4	5	9
T. evansi + T. camellensis	1	2	2	1	3

There was no significant difference in prevalence between male and female animals. However, there was a significant difference (P < 0.05) in prevalence between young and old camels. Haemoparasites are responsible for lowered production and a constraint to successful introduction of improved breeds of animals in different parts of the tropics and subtropics. They also cause decreased performance of indigenous breeds of livestock (Jorgen and Brian, 1990). Generally camels are less susceptible to most blood parasites of other domestic livestock. *T evansi* was reported in 15 % of camels examined in Ethiopia (Richard, 1976) and 7.8 % in camels raised under traditional management condition in Kenya (Chemuliti *et al.,* 2003) were higher than 4 % seen in this study. Camel trypanosomosis (Surra) usually appear as a chronic (sub acute) debilitating ailment, but the acute form is rare. The first signs of the disease are a drop in production (milk yield) and the tendency of pregnant females to abort. There is loss of appetite and the animals become very emaciated. Most of the camels positive for *T. evansi* were weak, emaciated with pale mucus membrane at the time of slaughter.

The effect of *T. evansi* on PCV was marked suggesting the possible effect of the parasite on the red blood cells leading to haemolysis. Some of the smears reveal high parasitaemia with macrocytic normochromic cell. *T. camelensis* also had severe effect on the PCV suggesting that it is pathogenic in camels (Table 2).

Table 2: Haemoparasites Status and Mean PCV Values of Camels

Haemoparasite status	Number of animals	Mean PCV
No parasite seen	97	33 ±6.5
Trypanosoma evansi	4	15 ± 5.1
Theileria camellensis	9	21 ± 8.1
T. evansi + T. camellensis	3	19± 7.6

Combination of *T. evansi* and *T. camelensis* also markedly affected the PCV of infected animals. Generally there is paucity of information on diseases of camels in Nigeria with particular reference to parasitic infections. There is need to further study the pathogenesis of these parasites to clearly understand their pathological effects.

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