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Sero-Prevalence of Anti-Brucella Antibodies in Camels in El-Gedarif State: A Short Communication

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Short Communication

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Abstract: The aim of this study was to determine seroprevalence of anti-brucella antibodies in camels in three different localities in El-Gedarif state, Eastern Sudan. Two hundred serum samples were collected from adult male and female camels were examined using the rose Bengal plate test (RBPT) and serum agglutination test (SAT). Overall seroprevalences of 32% (n= 64, 95% CI ±6.46) and 23% (n= 46, 95% CI ±5.83) were reported by RBPT and SAT respectively. There were no significant statistical differences in the reported seroprevalences among localities. Furthermore, no brucella species was isolated from any of the cultured lymph node samples. This study showed that the seroprevalence of anti-brucella antibodies using RBPT and SAT is relatively high. Further studies investigating brucellosis across the whole state should be carried out to explore the epidemiology of this disease in camels.

Keywords: anti-brucella, serum agglutination test (SAT), rose Bengal plate test (RBPT)

INTRODUCTION

The total camel population in the world is comprised of 17 million dromedaries and 2 million Bactrian [1]. The Sudan has nearly 3.3 million heads of camels, of which 594000 are in El-Gedarif state. Types of camels in the Sudan are either light type like Annafi and Booshari (Suhab) or heavy type such as Arabi, Rashidi and Kenana camels [2].

Brucellosis is a serious zoonotic disease affecting man and all domestic animals including camels. It is considered as one of the great public health problems all over the world [3].

It is caused by several bacteria from the genus Brucella that are facultative intracellular Gram-negative coccobacilli. *B. abortus*, *B. suis*, *B. melitensis*, *B. canis*, *B. ovis*, and *B. neotomae* are the most important members of this genus. Recently, new species including *B. ceti*, *B. Pinnipedialis*, *B. inopinata* and *B. microti* have been described [4, 5]. Brucellosis has been reported in camels in different parts of the Sudan with different seroprevalences [6-10]. The aim of this survey is to investigate the seroprevalence of anti-brucella antibodies in three localities in El-Gedarif state, Eastern Sudan.

MATERIALS AND METHODS

This survey was carried out in El-Gedarif state, Eastern Sudan. The state is located between latitude 16.4°-14.4°N and longitude 33.35°-35°E. It is boarded by the national borders of Sinaar, Kassala, Khartoum and Elgaziara states and by the international borders of Ethiopia.

A volume of 5 ml whole blood was collected aseptically for serum using plain vacutainer tubes with needle holder from each of 200 randomly selected adult male and female camels. The samples were left to stand overnight in a refrigerator, after that, sera were separated, decanted in capped vials, and frozen at -20°C at the Veterinary Research Laboratory, El-Gedarif, until used.

A number of 4 inguinal and 8 Supramammary lymph nodes were taken from sero-positive camels that were slaughtered at El-Gedarif slaughterhouse and transported in cooling boxes to the Veterinary Research Institute, Soba, Khartoum, and the Sudan. Each sample was homogenized by pestle and motor and prepared for modified Ziehl-Neelsen smear microscopy and

culturing onto tryptone Soya agar (Oxoid CM0131). Inoculated culture was incubated at 37°C with 10% CO_2 and the plates were examined daily for ten days macroscopically for growth of brucella species.

Rose Bengal plate test (RBPT) and serum agglutination test (SAT) were carried out to detect whether anti-brucella antibodies exist in the serum samples and measure their titers as described by OIE [11].

RESULTS

Of the 200 camel serum samples tested by RBPT and SAT, 64 (32%, 95% CI ±6.46) and 46 (23%, 95% CI ±5.83) were found to be positive for anti-brucella antibodies respectively. There were no significant statistical differences in the reported seroprevalences among the three different localities (Table 1). Moreover, brucella species were not isolated from any of the cultured lymph node samples.

Table 1: Sero-prevalences of anti-brucella antibodies among camels sampled in three localities of El-Gadarif state

Locality	No. of tested	RBPT		SAT	
		No. of +ve (%)	95% CI	No. of +ve (%)	95% CI
Elfashaga	100	14 (14)	±6.80	11 (11)	±6.13
Wast Elgadrif	50	31 (62)	±13.5	17 (22)	±11.5
Elgooraisha	50	19 (38)	±13.5	18 (36)	±13.3
Total	200	64 (32)	±6.46	46 (23)	±5.83

DISCUSSION

The overall sero-prevalences of anti-brucella antibodies in camels were found to be 32% and 23%. These seroprevalences are considerably high. Furthermore, camel brucellosis has been reported in the Sudan in the first half of 1970s. Since then, it is considered a public health hazard to camel owners, herders, and camel milk and meat consumers. The seroprevalence of anti-brucella antibodies in the Sudan ranged from 1.7% to 40% [8, 12-15]. These variations might be due to the close contact between camels and other ruminants during grazing and browsing in the pasture. Poor management practices and absence of sanitary measures such as improper disposal of aborted foeti and foetal membranes as well as free movement of animals play a major role in spreading of brucella species among domestic animals.

Camels are not primary hosts of brucella species; however, some species like *B. abortus* and *B. melitenses* were isolated from serologically positive camels for brucellosis in Buttana area, in the Sudan and in Iran [8, 16]. However, in this survey no any brucella species was isolated from any of the cultured samples collected from lymph nodes. Probably, the pathogen was cleared from the body of the animals or the number of investigated samples was very small. Fassi-Fehri [17] and Omer [13] were also not able to isolate brucella species from sero-positive camels.

It can be concluded that prevalence of anti-brucella antibodies is relatively high in camels in El-Gedarif state. This is no doubt a public health risk for camel owners, herders, and camel products consumers. Accordingly, it is recommended to raise awareness of the public on brucellosis as well as an area-wide survey using advanced diagnostic tools to explore the epidemiology of brucellosis in camels should be carried out in El-Gedarif state.

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