

A serological study of brucellosis in camels south of Kirkuk, Iraq

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Abstract

A study of the prevalence of antibodies to camel brucellosis has been carried out in the south of Kirkuk city during March 2011. A total of 66 camels (6 male, 60 female) involved in this study with age between 6 months to 22 years. Blood samples were collected from jugular vein and the sera samples were screened by using Rose Bengal Plate Test (RBPT). The sera that were positive by using RBPT have been tested again by using the 2-Mercaptoethanol (2ME) test. The results of this study revealed that two camels from 66 camels (3.03%) were seropositive for *brucella* antibodies in South of Kirkuk city.

Keywords: Brucellosis; Camel; Kirkuk; Serology.

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دراسة مصلية لمرض البروسيليا في الجمال جنوب كركوك، العراق

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الخلاصة

تمت دراسة انتشار اضرار مرض البروسيليا في الجمال في جنوب مدينة كركوك خلال شهر اذار من سنة ٢٠١١. شملت هذه الدراسة ٦٦ جملا (٦ ذكور و ٦٠ أنثى) باعمار تراوحت بين ٦ شهور الى ٢٢ سنة. أخذت عينات الدم من الوريد الوداجي للحيوانات. تم فحص المصل التي اعطت نتائج موجبة باستخدام اختبار وردية البنكال. المصل التي اعطت نتائج موجبة باستخدام اختبار وردية البنكال تم فحصها مرة اخرى باستخدام اختبار ٢-مركبتوايثانول. نتائج هذه الدراسة أظهرت ان اثنتين من مجموع ٦٦ جملا (٣,٠٣%) الموجودة في جنوب مدينة كركوك كانتا موجبتين لتواجد اضرار البروسيليا.

Introduction

Brucellosis has been an occupational risk for farmers, veterinary surgeons and employees in the meatpacking business (1). Brucellosis which caused by *brucella spp.*, is an important zoonotic disease and has become a major world wide human concern (2). The disease is causing abortion and birth of non-viable offspring in female, and orchitis and epididymitis in male animals and infertility in both (3). Serological evidence for *Brucella* infection in

camels has been reported from Asia and Africa (4). There are so many factors that can affect the prevalence of brucellosis in various species of livestock (5). Prevalence of brucellosis can vary according to climatic conditions, geography, species, sex, age and diagnostic tests applied (5). A survey of the seroprevalence of brucellosis in sheep, goats, cattle, buffalo and camel in Iraq was made in May 2005 in cooperation with FAO and it's covered the 18 Governorates of Iraq and a total of 34,560 serum samples (18,360 sheep and goats, 9,720 cattle, 5,940 buffalo and

540 camels) were screened using the Rose Bengal test, as screening test, the apparent prevalence of the disease in camels were 0% (6).

This study was aimed to determine the seroprevalence of brucellosis among camels in the South of Kirkuk city \ Iraq.

Materials and methods

Sample Collection

Blood samples were collected by jugular vein from 66 (6 male and 60 female) clinically healthy camels 6 months to 22 years old. Sera were separated after centrifugation at 2000 rpm for 5 minutes and stored at -20°C until performing the serological tests.

Serological Test

The antibodies to *brucella spp* were detected initially by RBPT using commercially available test kit (Refik Saydam Hygiene center Antigen-Antiserum Production and Research Laboratory-RSHM). Rose Bengal test was carried out according to the instruction of manufacturer, then positive reactor sera were retested by the 2-mercaptoethanol test (2ME) test according to (7).

Results

Two out of 66 camels tested (3.03%) were found to be seropositive to brucellosis in the RBPT. The affected camels were female and their ages were 4 and 10 years respectively. A positive 2ME test was found in both cases at titer 1:160.

Discussion

According to the Food and Agriculture Organization (FAO), the World Health Organization (WHO) and the Office International des Epizooties (OIE) brucellosis is still one of the most important and widespread zoonoses in the world (8). More over there is public health hazards and high-risk human other than occupational contactors through consumption of milk or milk products of seropositive animals (9).

In our study the seroprevalence of antibodies to camel brucellosis was 3.03%. In camels, the seroprevalence of brucellosis based on serological tests has been ranged from 0.0-17.20 % in Arabian and African countries (5), from 26.5-30 % in Sudan (10), from 8-15% in Kuwait, while the seroprevalence of camel brucellosis was 1.86% in Saudi Arabia (11).

In Mosul, Iraq, there are many serological studies: in a study achieved by Al-Obaidi *et al.*, (12), the prevalence of milk samples in ewes and does positive to antibodies of brucellosis was 6.6% and 11.3%, respectively (12), bovine

brucellosis %5.8 (13), lambs 25.3- 27.5% (14). In the area studied in Kirkuk, the little contact of the camels with small ruminants and in addition to that the high uncontrolled animal movements through the borders could explain the main factor of this high prevalence where camels reared with small ruminant animals.

RBPT has been found more efficient than other serum agglutination tests although antigens produced by different laboratories and working procedures may affect the sensitivity (15,16). Accordingly, RBPT is considered as satisfactory screening test (17), while the studies by Rhaymah *et al.* (18) and Mohammed *et al.* (14) concluded that the Indirect ELISA test was more sensitive than rose Bengal, tube agglutination and 2- Mercapto-ethanol tests. However, some surveys apply more confirmatory tests in addition to demonstration of *Brucella spp* in culture (19).

In this study we used the Rose Bengal test to screen all samples and confirmed the positive samples by (2ME) test. The 2ME will block all IgM antibodies by breakdown disulphide links that permit to assess pure IgG antibodies which had value in detecting active brucellosis (20). This shows that both positive cases by RBPT have IgG antibodies which reflect acute exacerbation of the previous attack of brucellosis.

References

1. Lopes LB, Nicolino B, Haddad JP. Brucellosis - Risk Factors and Prevalence: A Review. The Open Veterinary Science Journal. 2010; 4:72-84.
2. Neta AVC, Mol JP, Xavier MN, Paixao TA, Lage AP, Santos RL. Pathogenesis of bovine brucellosis. Vet J. 2010;184:146-155.
3. Bati BM. Sero-Epidemiological study of brucellosis in camels (*camelus dromedarius*) in Borena lowland pastoral areas, southern Ethiopia [master's theses]. Addis Ababa University; Ethiopia: 2004. 65p.
4. Dawood HA. Brucellosis in Camels (*Camelus dromedarius*) in the south province of Jordan. American Journal of Agricultural and Biological Sciences. 2008;3:623-626.
5. Gul ST, Khan A. Epidemiology and Epizootology of Bbrucellosis: A Review. Pakistan Vet J. 2007;27:145-151.
6. Sharief DM, Saleem HM, Al-Kubaisi AH, Mahdi AJ, Mahmood TS, Saeed EA, a Al-Adhad BN. Survey of the Seroprevalence of Brucellosis in Ruminants in IRAQ. 11th International Symposium on Veterinary Epidemiology and Economics. 2006. Available from: www.sciquest.org.nz
7. Allton GG, Jones LM, Angus RD, Verger JM. Techniques for the brucellosis laboratory, IMRA, Paris, France. 1988:190.
8. Young EJ. An overview of human brucellosis. Clin Infect Dis. 1995; 2:90-283.
9. Schelling E, Diguimbaye C, Daoud S, Nicolet J, Tanner, M and Zinsstag J. Brucellosis and Q-fever seroprevalences of nomadic pastoralists and their livestock in Chad. Prev Vet Med. 2003;4:279-293.
10. Abbas B, Agab H. A review of camel brucellosis. Preventive Veterinary Medicine. 2002;55:47 – 56.
11. Al- Karashi MMF. A serological study of brucellosis in camels in the Riyadh region of Saudi Arabia. [master's theses]. Al-Malik Saud University; Saudi Arabia. 2006.

12. Al-Obaidi QT, Hassan SD, Mohammad BA, Arslan SH. Prevalence of brucellosis using indirect ELISA test in raw milk in individual cases of ewes and does in Mosul city. *Iraqi J Vet Sci.* 2009; 23(2): 111-114.
13. Hadad JJ, Jamalludeen NMA. The prevalence of brucellosis in cattle in Ninevah province. *Iraqi J Vet Sci.* 1990;5:159-164.
14. Esmael SA, Mohammed BA, Hassan SD, Hassain Kh.J. Detection of anti brucella antibodies in lambs and goat kids using rose Bengal test and indirect ELISA in Gugjeli-Ninavah province, Iraq. *Iraqi J Vet Sci.* 2010;24(1): 23-26.
15. Ajogi I., Adamu NB. Camel brucellosis in semiarid zones of Nigeria. In Proceeding of ARC Onderstepoort, OIE International Congress. August. Berg En-Dal, South Africa. 1998.
16. Quinn PJ, Markey BK, Carte ME, Donnelly WJ, Leonard FC. Brucella species. In: *Veterinary Microbiology and Microbial Diseases.* London: Blackwell Science Ltd. 2002. p168-172.
17. OIE. Bovine Brucellosis. In: *Diagnostic Technique Manual of Standards for Diagnostic Tests and Vaccine* 4th ed., Paris: Office International Des Epizooties. 2000;328-345.
18. Rhaymah MSh, AL-Saad KM, AL-Hankawe OKh. Diagnosis of bovine brucellosis in Mosul city by indirect ELISA and conventional serological tests. *Iraqi J Vet Sci.* 2010; 24(1):1-6.
19. Cho D, Nam H, Kim J, Heo E, Cho Y. Quantitative rose Bengal test for diagnosis of bovine brucellosis. *J Immunoassay Immunochem.* 2010;31:120-130.
20. Nadia A. AL-Derzi. The value of 2-Meracptoethanol test in diagnosing recurrent active brucellosis. *Dohuk Medical J.* 2007;1(1): 23-31.