PREVALENCE OF BRUCELLOSIS IN BUFFALOES OF BASRA GOVERNORATE, BASRA - IRAQ

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(Received 28 February 2017 ,Accepted 13 March 2017)

Keywords: brucellosis, buffaloes, Elisa, Basra.

ABSTRACT

The present study was conducted to identify the prevalence of brucellosis among buffaloes in Basra governorate, via examination of serum samples from 250 she buffaloes reared in different Basra reigns. Sera were examined firstly by rose Bengal test (RBT) followed by indirect enzyme linked immunsorbent assay (Elisa).

The result of RBT indicated that from 250 buffaloes serum samples there were 27(10.8%) positive against *Brucella abortus* antigen.

Elisa test was performed on 88 sera samples that included a 27 RBT positive sera and other 61 negative sera, and the result revealed that 21(23.8%) seropositive sera for *Brucella abortus*. According to the regions of Basra Governorate the percentage rate of brucellosis were indicated in: Al Hartha 6(5,28%) then Al Qurna 5(4,4%), Al Dear 4(3.5), Al Zubair 3(2.6%), Al Medaina 2(1.76%) and Al Tanooma 1(0.88%). More over, infection in older animals found more significant ($P < 0.05$) than in youngness, beside that infection rate were high in pregnant buffaloes in compared with non pregnant animals.

Conclusion: the brucellosis of buffaloes in Basra governorate were caused by *B. abortus* and were more prominent in pregnant animals, therefore animals screening of suspected animals was advised,

INTRODUCTION

Buffaloe brucellosis caused by *Brucella abortus*, define as an important zoonotic disease in different developing countries (1), brucellosis is known in a group of closely related infectious diseases caused by bacterial pathogen of the genus

Brucella. The disease manifestation include abortion in the infected females, orchitis and sterility in bulls (2). The hazard of the disease may achieve by infection of 38-50% of buffaloes population in some countries (3). Brucellosis in buffaloes is known as one of important diseases affect reproductive system, capable of causing abortion storms in the breeding season during the last third of pregnancy, retention of the fetal membranes , stillbirth and reduction in milk yield which results in great economic losses (**4**).

Serological tests using the Rose Bengal test (RBT), slide agglutination test (SAT), tube agglutination test (TAT), mercaptoethanol test and enzyme-linked immunosorbent assay (ELISA) are generally used for the detection of *Brucella* infection in livestock. More over ELISAs have been evaluated for many years for their ability to detect serum antibodies to brucellosis in domestic animals, as well as ELISA has several advantages for the diagnosis of brucellosis when compared with other tests (**5**).

In Basra there was no field study on brucellosis in buffaloes, so the present study was conducted to investigate clinical *Brucella abortus* infection in different buffaloES population in Basra governorate.

MATERIAL AND METHOD

Samples were collected from buffalo in different parts of Basra province at a period started from 5 /9 /2015 to 5 /12 /2016.

The included buffaloes 250 in present study. The sampling and serum separation as in (6). The clinical finding were estimated as in (7) .

The Rose Bengal test (RBT) was performed on glass plates according to the method described by (8).

The indirect ELISA kit (blue gene biotech, Shanghay - China) was used to detect Brucella antibodies in serum samples. The samples were considered positive if their optical density was equal to or greater than the mean of 3 ± 0.12 based on ELISA at the wavelength of 450nm (9).

The statistical analysis was done according to SPSS .

RESULT

The examination of 250 buffaloes serum samples by Rose Bengal test showed 27(10.8%) positive agglutination as in table (1).

Table (1) Brucellosis in buffaloes of Basra by Rose Bengal test

Regions	numbers of animals	RBT	
		Sero +ve (%)	Sero –ve
Total	250	27 (10.8%)	223

The Elisa test was done on 88 samples that included the sum of 27 RBT positive sera and 61 negative sera, the total 88 samples appeared 21(23.8 %) seropositive for *Brucella abortus* (table-2).

Table (2) Result of Elisa for *Brucella abortus* in buffaloes

Regions	numbers of animals	Number +ve Elisa (%)
Al Hartha	30	6(6.81%)*
Al Qurna	15	5 (5.68 %)*
Al Dear	18	4(4.54%)
Al Zubier	10	3(3.4%)
Al Medaiana	7	2(2.27%)
Al Tanooma	8	1(1.13%)
Total	88	21(23.86%)
Significance		(P < 0.05)*

The table (2) also referred that Al Hartha infected by high ratio of *B abortus* 6 (6.81%) then regions arrenged on Al Qurna5 (5.68 %) , Al Dear4(4.54%), Al Zubier 3(3.4%) , Al Medaiana 2(2.27%) and Al Tanooma1(1.13%) with significant higher infection for Al Qurna and Al Dear than other regions.

The effect of age grouping was disclosed in table (3), the aged group (>5 _ 8.5) years old was highly affected 12(30%).

Table (3): Infection rate of *Brucella abortus* according to age groups

Age group (years)	numbers of animals	ELISA results	
		Positive n.(%)	Negative
1.5 _ 5	48	**9(10.22%)**	**39**
>5 _ 8.5	40	**12(13.63%)**	**28**
Total	88	**21 (23.86 %)**	**67**
Significant			**(P>0.05)**

The effect of pregnancy status was shown in table (4), that founded the pregnant buffaloes with high level of infection **16(18.18%)** by used Elisa test, while those non pregnant had **5(5.68%)** seropositive**,** with significant important (P<0.05).

Animal status	numbers of animals	ELISAresults	
		Positive n. (%)	Negative
Pregnant	**50**	**16(18.18%)***	**34**
Non_ pregnant	**38**	**5(5.68%)**	**33**
Total	**88**	**21 (23.86%)**	**67**
Significant		**(P< 0.05)***	

Table (4) The infection rate of brucellosis according to pregnancy status

DISCUSSION

The brucellosis is one of most important zoonotic diseases, can infect several species of animals such as buffaloes. buffaloes can infected by *Brucella abortus* as zoonotic disease in many countries (**1**).

Once in present study the 250 buffaloes samples showed 27(10.8%) had positive The Rose Bengal Test (table-1). The Rose Bengal Test is one of the buffered *Brucella* antigen tests, which is rapid agglutination test (8). It was often used as a screening test in animal and human brucellosis, whatever it would be optimal for small laboratories with limited means, because its false-negative reactions especially in the early stages of acute infection (10).

The Elisa test as done on 88 of samples, included a summation 27 RBT positive sera and 61 negative sera, the total 88 samples appeared 21(23.8 %) seropositive for *Brucella abortus*. The Elisa result was confirmed infection by *B abortus* in buffaloes which most specific and sensitive test (**11**). The infective agent was shed during parturition to be source of infection for others and increased susceptibility with sexual activity of animal (12) . The non pregnant buffaloes can get infection with no clinical evidence since gestation been progress (7,10).

The brucellosis according to the regions were significantly higher in Al Qurna and Al Dear than other regions in table (2). In general the brucelosis is well known in animal population specially those reared or housed as groups together such as buffaloes (10), that will give more contact among them and subsequent increased in incidence of infection (13).

The age group (>5 - 8.5) years old buffaloes showed highly infective rate (13.6 %) than group of (1.5 - 5) years old (10.2%), in fact explained by an authors as *Brucella* spp infection has followed by an elevation of antibodies level, and can be detected in patient serum for several months (12,14). Also other researchers described that young animals were less susceptible for clinical brucellosis even though they carry infective *Brucella* bacterium , that bacterium been active in association to productivity an well develop sexual organs(7).

The pregnancy status appeared pregnant buffaloes in high level of infection (18.1%) by Elisa test, whereas non pregnant (5.6%) seropositive, in significant important ($P<0.05$), such result indicated an infection is more active in pregnant than non pregnant females specially for last third of gestation (7,10).

The buffaloes can be infected by *B abortus* specially following expulsion of aborted or delivered fetus, because increased shedding of bacterium, in this case the uterine discharge and even fetal discharges have been source of infection, and *Brucella* may survive for several months in the winter field environment (7,12).

انتشار مرض البروسللوسز في جاموس محافظة البصرة. البصرة - العراق

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أجريت الدراسة الحالية للتعرف على مدى انتشار مرض البروسيلا بين الجاموس في محافظة البصرة، عن طريق فحص عينات من مصل الدم من 250 لجاموس يربى في مختلف مناطق البصرة . اذ تم فحص الأمصال أولا عن طريق اختبار وردية البنغال و يليه اختبار انزيم البلمرة غير المباشر.

وأشارت نتيجة اختبار وردية البنغال أن من 250 عينات الجاموس المصل كانت هناك 27 (10.8٪) موجبة لمستضد البروسيلا المجهضة.

تم إجراء اختبار انزيم البلمرة غير المباشر على 88 عينة مصل التي شملت 27 مصل حيوان موجب لاختبار وردية البنغال والآخرى 61 الأمصال السالبة، وكشفت النتيجة أن 21 (23.8٪) مصلا يحتوي على مستضدات البروسللا المجهضة . ووفقا لمناطق محافظة البصرة كانت نسبة انتشار المرض باختبار انزيم البلمرة غير المباشر من الاعلى كما يلي: الهارثة 6 (28،5٪)، ثم القرنة 5 (4،4٪)، الدير 4 (3.5)، الزبير 3 (2.6٪)، المدينة 2 (1,76%) و التنومة 1 (0,88%). وعلاوة على ذلك أظهر اختبار انزيم البلمرة غير المباشر أن الجاموس الذي أكثر من خمس سنوات من العمر لديه مرض البروسيلا أكثر من الأعمار الأخرى باهمية احصائية اقل من 0.05 . وان اناث الجاموس الحامل كانت اكتر خمجا وبنسبة 18,18% مقارنة بغير الحوامل وباهمية احصائية ملحوظة باقل من 0.05.

تم تثبيت حصول خمج البروسللا المجهضة في الجاموس في محافظة البصرة ، وكان ذلك اكثر اهمية في اناث الجاموس الحامل. ولذلك ينصح الحيوانات فحص الحيوانات المشتبه.

REFERENCES

1. Smits, HL., Kadri, SM. (2005) Brucellosis in India: adeceptive infectious disease. Indian J. Med. Res 122:375-384.
2. Muma, JB., Samui, KL., Oloya, J., Munyeme, M., Skjerve, E., (2007). Risk factors for brucellosis in indigenous cattle reared in livestock-wildlife interface areas of Zambia. Prev. Vet. Med., 80:306–317.
3. Thimm, BM. (1982). Brucellosis, distribution in man , domestic and wild animals. Springer,Verlag. Berlin Heidelberg GmbH.60p
4. Sahin, M., Unver, A and Otlu, S. (2008). Isolation and biotyping of Brucella melitensis from aborted sheep fetuses in Turkey. Bull. Vet. Inst., 52: 59-62.

5.Gul, ST., Khan, A. (2007). Epidemiology and Epizootology of brucellosis: A review. Pak. Vet., J., 27, 145-151.

6.Jackson, PGG. and Cockcroft, PD. (2002). Clinical Examination of Farm Animals. Blackwell Science.313p

7.Radostits, OM., Gay, CC., Hinchcliff, KW. and Constable, PD. (2007) Veterinary Medicine, 10th Ed., W.B.Saunders Co.2156p

8.Alton, GG., Jones, LM., and Pietz DE., (1975). Laboratory techniques in brucellosis. 2nd ed., Monograph Series No. 55. World Health Organization, Geneva. Cited by Cherwonogrodzky, J.W., Dubray, G., Moreno, E., Mayer, H., (1990) Antigens of Brucella In: Animal Brucellosis. Edited by Nielsen K and Duncan JR. CRC Press, Florida. 19-64.

9.*Brucella abortus* Elisa kit procedure (2016) Elisa kits Bo BS-IgG Elisa, BlueGene

10. Alton, GG. (1990). Brucella melitensis. In: Animal Brucellosis. Edited by Nielsen K and Duncan JR. CRC Press, Florida. 379–382

11. Weynants, V., Gilson, D., Cloeckaert, A., Denoel, PA., Tibor, A., Thiange, P., Limet, JN., Letesson JJ (1996). Characterization of a monoclonal antibody specific for brucella smooth lipopolysaccharide and development of a competitive enzyme-linked immunosorbent assay to improve the serological diagnosis of brucellosis. Clin. Diag. Lab. Immunol., 3, 309-314.

12. Nielsen K, Cherwonogrodzky JW, Duncan JR, Bundle DR. (1989). Enzyme-linked immunosorbent assay for differentiation of the antibody response of cattle naturally infected with *Brucella abortu*s or vaccinated with strain 19. Am J Vet Res. 1989, 50: 5-9.

13. Thrusfield, M. (1986) Veterinary Epidemiology. Butterworths & Co. London, UK

14. Tizard, I. (1992) Veterinary Immunology: An Introduction. 4th Ed. W.B.Sanders Co. Mexico.498p