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SEROLOGICAL STUDY OF BRUCELLOSIS ON CAMELS IN ASSIUT AND THE NEW VALLEY GOVERNORATES

(With One Table)

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دراسة سيرولوجية تشخيصية عن البروسيلا فى الجمال فى محافظتى أسيوط والوادى الجديد

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أجريت هذه الدراسة على عدد ٣٠٠ عينة من دم الجمال التى تم تجميعها من محافظتى أسيوط والوادى الجديد لتحديد نسبة الإصابة بالبروسيلا بين الجمال. وقد تم فحص جميع العينات سيرولوجيا بواسطة اختبارى الانتيجن الشريحى المحمض المخمد والروز بنجال والعينات الإيجابية أجرى لها اختبارى التلازن الأنبوبى والريفانول. وأسفرت النتائج عن ٧ (٢,٣٣%) حالات إيجابية للبروسيلا منها ٢ ذكور (٠,٦٦%) و ٥ إناث (١,٦٦%) وكانت نسبة الإصابة فى محافظة أسيوط (٣,٠٤%) فى حين لم تسجل محافظة الوادى الجديد أى حالات إيجابية.

SUMMARY

A serological study was performed on 300 camels sera collected from Assiut and New Valley Governorates to estimate the incidence of brucella infection among camels. All samples were examined serologicaly by Buffered acidified plate antigen test (BAPAT) and Rose Bengal plate test (RBPT) and positive reactors were confirmed by tube agglutination test (TAT) and Rivanol tests (R.T.). Of the 300 camel sera tested, 7 positive reactors (2.33) were detected, 2 males (0.66%) and 5 females (1.66%). The incidence in Assiut was 3.04% while no positive reactors were detected in the New Valley.

Key words: *Brucella, Camel, Rose Bengal, New valley.*

INTRODUCTION

Brucellosis is still one of the important zoonotic diseases of a serious public health and economy problem in many countries. It was

being eradicated among domestic animals in some countries, is still prevalent in some others where it poses a potential threat to the consumers of milk and cheese and those working with animals and meat of slaughtered animals (Almer, 1985). In Egypt camels are still important animals for meat production and help in transportation of agricultural crops. The infection is caused by different biotypes of Brucella abortus and Brucella melitensis. There is no clear policy in any of the camel-keeping countries regarding the control of brucellosis in camels (Abbas and Agab, 2002).

The incidence of positive results were recorded by Ayoub *et al.* (1978), they found that the percentage of camel brucellosis was 24-25% in females and 14-28% in males when 216 camels sera were examined by (SAT) and (RBPT). Okoh (1979) in a survey on 232 camels serum samples found that 1.5% was positive. Damir *et al.* (1984) said that from 740 camels sera, brucella antibodies were 5.6% in males and 4.5% in females.

Zaghloul and Kamel (1985) recorded that the incidence of brucellosis in camels in Assiut province were 8.11% by (RBPT) and (STAT), also Lotfi *et al.* (1987) found that the percentage was 7.9%. Yaqoub *et al.* (1990) in a five years investigation of brucella antibody prevalence in camel, the incidence of positive results was 6.95±1.55%. Among adult one-humped camels the rate was 4.94±2.51% in males and 13.76±4.41% in females. Antibodies against brucella abortus were prevalent in one-humped camel sera throughout the five years of the survey with incidence rate of 6.54, 5.79, 9.32, 5.03 and 8.06% respectively from 1985-1989. Baumann and Zessin (1992) determined the prevalence for burcellosis as 1.9% by (SAT) and 0.3% by (CFT). At the same time. Radwan *et al.* (1992) said that the overall seroprevalence of brucellosis in tested camels was 8%. Omer *et al.* (2000) documents the first serological evidence of brucella species in camels (3.1%) in Eritrea. El-Ansary *et al.* (2001) found that of 64 camel sera tested with (SAT) and (TAT) non were positive, while Teshome *et al.* (2003) indicated that sera collected from 1442 accessible camels were screened with (RBPT), 82 (5.7%) of them reacted and the results of complement fixation test (CFT) on those reactors indicated 4.2% prevalence of brucellosis.

The present study attempts to investigate the incidence of brucellosis among camels in Assiut and New Valley Governorates by the different serological tests.

MATERIALS and METHODS

(A) Samples collection:

A total of 300 blood samples were aseptically collected from clinically healthy camels, each of 10 cc collected in clean and dry screw capped tubes. These samples were left at room temperature or at 37°C for 1/2 hours in inclined position, then placed in the refrigerator for 18 hours. Centrifugation for each sample at 3500 R.P.M. for 15 minutes, then the serum were kept at 4°C in the refrigerator till use for serological examination. The tested sera must be inactivated in water bath at 56°C for 1/2 hour to destruct the non specific antibodies before being tested (Amerault *et al.*, 1961).

(B) Serological examination:

All the sera were subjected to four serological tests: Rose Bengal Plate test (RBPT), Buffered Acidified Plate test (BAPT), Tube Agglutination test (TAT) and Rivanol test (R.T).

The four used antigens were supplied by serum and vaccine Research Institute, Abbassia, Cairo, Egypt. The techniques of RBPT, BAPT and TAT were carried out according to Anon (1992), while that of Rivanol test was performed according to Anon (1984).

RESULTS

The results were tabulated in table No. (1).

Table 1: Seroprevalence of brucellosis among camels in Assiut and New Valley Governorates by different serological tests.

Locality	No. of Examined animals	Sex	Serological tests									
			RBPT		BAPT		TAT			Rivanol		
			+	%	+	%	1/160	1/320	%	1/200	1/400	%
Assiut	230	160♂	6	3.7	7	4.3	1	1	1.3	1	-	0.6
		70♀	2	2.8	3	4.3	1	4	7.1	-	6	8.6
			8	3.5	10	4.3	2	5	3.04	1	6	3.04
New Valley	70	50♂	-ve	-	-ve	-	-ve	-ve	-	-ve	-ve	-
		20♀	-ve	-	-ve	-	-ve	-ve	-	-ve	-ve	-
			-ve	-	-ve	-	-ve	-ve	-	-ve	-ve	-
Total	300		8	2.7	10	3.3	2	5	2.3	1	6	2.3

DISCUSSION

Brucellosis is still a serious problem in most countries of the world due to its zoonotic and economic importance. So the early detection of brucella infection in a herd or flock is a pre-request for the successful control and elimination of one of the major problems considered to be a predisposing factor leading to infertility and sterility along with the possible transmission of infection to human (FAO/WHO) 1986. Control of the disease in animals depends mainly upon the use of efficient diagnostic procedures that insure the lowest possible incidence of false negative reaction (specific test) and false positives (sensitive test). In this study four different serological testes were used for diagnosis of brucellosis in camels, (BAPT and RBPT) were used as screening tests which revealed an incidence of (3.3%) and (2.7%) respectively and (TAT and Rivanol test) were used as confirmatory tests with an incidence of (2.3%). From the obtained results, it is evident that screening tests BAPT (3.3%) & (RBPT (2.7%) showed the highest percentage of positive reactors if compared with TAT and Rivanol test (2.3%). These results agrees with that obtained by Teshome *et al.* (2003) and Abdel Rasheed (2004). This may be claimed to the higher sensitivity of these testes as reported by El-Bauomy (1989). Also the acidic pH (3.6 in RBPT and 4.0 in BAPT) of the used antigen inhibit to a certain extent the activity of non specific immunoglobulins. Stemshorn *et al.* (1985) reported that BAPT detected higher incidence of positive reactors than RBPT, this may be ascribed to the fact that the test is more sensitive in detecting IgM and IgG, it could also depend on the amount of serum used in this test in which is more than the amount of serum used in RBPT. This results agree with our obtained results that recorded BPPT (3.3%) and RBPT (2.7%).

TAT was included in these serological tests as it detects mainly IgM and IgG classes of antibodies (Barton 1994). Also, Rivanol test is a useful and reliable test in detecting brucellosis without serious number of false positive, it is a highly specific, dependable and an official diagnostic test as it detects mainly the presence of the specific IgG through the precipitation of IgM (Hamdy, 1992).

The obtained results in table (1) revealed that the incidence of brucellosis in camels recorded higher detection by screening tests BAPT 3.3%, RBPT 2.7% and 2.3% by TAT and Rivanol test as a confirmatory tests. A higher incidence were recorded by many authors, Ayoub *et al.*

(1978) recorded an incidence of 24-25% in females and 14-28% in males by using SAT and RBPT. In Assiut, Zaghloul and Kamel (1985) recorded an incidence of 8.11% while Lotfi *et al.* (1987) recorded an incidence of 7.9% with STAT and RBPT. Barsoum *et al.* (1995) recorded an incidence of 8% in Sharkia, 4% in Kaliobia and 6% in Dakahlia. Also, Abdel Rasheed (2004) recorded an incidence at Behira province of 8.74%, 9.53%, 9.92%, 8.09%, 8.87%, and 9.26% of camel brucellosis with RBPT, BAPT, TAT, Mercaptoethanol test, Rivanol test and Elisa respectively.

As regards this high incidence that recorded by many authors, it may be explained as they don't use the heat inactivation technique to the serum samples before being used serologically to inactivate the non specific brucella agglutinins (Amerault *et al.* 1961) so, false positive samples were included in these incidence. Another factor may be attributed to the wet weather (muddy and rainy) of most of this regions, that represent a predisposing factor for spread of brucella infection.

The negative results of brucella infection obtained in the present study in New Valley Governorate may be attributed to the deserty dry hot weather of this locality beside being isolated districts that limit the spreading of brucella micro-organisms where it can not survive for long period and consequently limit the spread of infection (Nashed, 1977 and Gadalla, 1991). Also most of the samples collected from restricted newly free non infected areas.

Epidemiologically, brucellosis in camels represents a serious public health risk and high-risk human other than occupational contactors through consumption of milk, milk products and meat products of seropositive animals (Almer, 1985). So camels must be included in the national program for control and eradication of brucellosis in Egypt.

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