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SEROLOGICAL STUDY OF CAPRINE BRUCELLOSIS IN ASSIUT GOVERNORATE

(With 2 Tables and 1 Figure)

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دراسة سيرولوجية عن البروسيلة فى الماعز فى محافظة أسيوط

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اجريت هذه الدراسة لتحديد نسب الاصابة بالبروسيلة فى الماعز فى محافظة أسيوط وتم تجميع عدد ١٦٢٨٥ عينة دم من الماعز من أربع مناطق هى أسيوط ومنفلوط وصدفا والغنايم وذلك خلال عام ١٩٩٥ من يناير إلى ديسمبر وقد تم فحص هذه العينات سيرولوجيا وذلك باجراء اختبارات الروز بنجال والمحمض المتوازن الشريحي واختبار التليد الانبوبي واختبار الريفانول وكانت نتائج هذه الاختبارات بالنسبة للمحافظة ككل ٠,٣٣ % ، ٠,٣٣ ، ٠,١٥ ، ٠,٣ % على الترتيب ، وقد نوقشت أسباب إختلاف هذه الاختبارات .

SUMMARY

A serological study was carried out to estimate the incidence of brucella infection among goats in Assiut Governorate. A total of 16285 blood samples were collected From goats from 4 regions through the period from January to December 1995. The samples were examined serologically by Rose Bengal test, Buffered Acidified Plate Test, Tube Agglutination test and Rivanol test. The results of these tests were 0.33 % , 0.33% , 0.15% and 0.3% respectively all over the governorate . Causes of differences between these tests were discussed.

Key words: Brucellosis - Caprine - Assiut.

INTRODUCTION

Brucellosis is an acute and / or chronic complex disease of animals and man , which has a serious effect on reproduction in animals . Brucellosis in sheep and goats is originally caused by *Brucella melitensis*. It was the first species of the genus *Brucella* to be described (Bruce, 1886).

In Egypt the first study of brucellosis in goats was published by El-Nahas (1951) who reported an incidence of 21.5% among 400 goats . Kamel *et al* (1961) found 5.8 % of 4618 goats as positive reactors . The rate of positives among 480 goats tested by Shaukat (1973) was 7.1 % by tube agglutination test. Nashed (1977) reported 0.82% incidence of caprine brucellosis while Nada (1982) recorded an incidence of 4.7% among 468 goats El-Olemy *et al* (1984) mentioned that the rate of brucella infection among 326 goats was 5.2 % , while Zaghoul and Kamel (1984) failed to detect any positive reactors among goats in Assiut Governorate. Recently further investigations were done upon caprine brucellosis, El-Bauomy (1989) examined goats by using tube agglutination, mercapto ethanol, buffered acidified plate antigen, Rose Bengal plate and Rivanol test and the percentage of positive reactors were 18.57%, 13.75%, 19.5%, 14.6 % and 8.04 % respectively. Kaldes (1990) recorded an incidence of 0.45 % among 442 tested goats. Montaser (1995) demonstrated marked differences in the results of different tests applied in caprine brucellosis. The present work aimed to give a spot light on the disease among goats in Assiut Governorate.

MATERIAL and METHODS

A total of 16285 blood samples were aseptically collected from goats in four regions at Assiut Governorate (Table 1) during the period from January to December 1995 through national brucellosis eradication programe .The collected samples were kept in the refrigerator over night . The sera obtained were carefully decanted and transferred into 2ml sterile tubes.

All the sera were subjected to the Rose Bengal Plate test (RBRT) and Buffered Acidified Plate Antigen (BAPA); sera which gave positive reactions were furtherly subjected to the tube agglutination test (TAT) and Rivanol test .

The used antigens were supplied by Serum and Vaccine Rearch Institute, Abbasia ,Cairo . The methods for RBPT, BAPAT and TAT were performed according to manual of bovine brucellosis (Anon, 1992), while

that of Rivanol test was carried out according to (Anon, 1984) supplemental test procedures for the diagnosis of brucellosis .

RESULTS

Table (1) Illustrates the results of serological tests .

Table (2) Illustrates the detailed results of positive reactors by TAT & rivanol tests .

Fig .(1) Illustrates the incidence of caprine brucellosis in Assiut by different serological tests .

DISCUSSION

No one can deny that brucellosis is a great problem in most countries of the world , so great efforts must be done to eradicate this disease . Diagnosis of brucellosis in animals is based mainly on clinical signs, serological examination and bacteriological investigation. Great difficulties are encountered for the isolation of brucella organisms specially from heavily contaminated samples. Therefore, diagnosis of brucellosis in different countries of the world including Egypt mainly depends upon the application of different serological procedures, which play a major role in the routine diagnosis of brucellosis among animals .

In the present study different serological tests including Buffered Acidified plate test (BAPA), Rose Bengal Plate Test (RBPT), Tube agglutination test (TAT) and Rivanol test were applied for the diagnosis of brucellosis. In this work 16285 blood samples were collected from four regions in Assiut Governorate and were subjected to the above mentioned serological tests.

The BAPA and RBPT tests were used as screening tests for detection of brucella positive reactors among goats . These tests were chosen due to their practicability and efficiency (Morgan *et al.*, 1969; Corbell, 1972 and Angus and Barton, 1984).

The incidence of caprine brucellosis in Assiut Governorate by TAT was 0.15 % , BAPA 0.33% , RBPT 0.33% and Rivanol 0.3% and this incidence is somewhat similar to that obtained by Nashed (1977) in Assiut Governorate and Kaldes (1990), in Minia Governorate, while Zaghoul and Kamel (1985) failed to detect any positive reactors among goats in Assiut province. The low incidence which was obtained may be due to the dry hot climate of Assiut governorate in which brucella microorganisms cannot

survive for long periods and consequently may limit the spread of infection. Some authors reported an incidence higher than that obtained in the present study, which may be attributed to the fact that most of their samples were obtained from infected flocks having a history of abortion. However in this study the samples came from four different localities representing the governorate and including flocks with or without history of brucellosis, and in the same time it included large numbers of animals and lasted for a long time. Thus the results of this work could be regarded more or less real and accurate representing the actual status of caprine brucellosis in Assiut Governorate.

It is clear from this study that the highest incidence of brucellosis was detected in Sedfa region followed by Assiut region then Manfalout region and the least was detected in EL -Ghaniem region which is more nearer to the desert where dry weather and high temperature are evident.

Compared with the TAT, the BAPA and the RBPT gave higher percentage of positive goats Table (1) & Fig.(1) depending on the fact that TAT has certain limitations especially in recent infections (Morgan,1967) and chronic cases (Nicolas *et al.* , 1978). The low incidence of the TAT may be also attributed the antigen used in this test which is prepared from *Br. abortus* strain. Using an antigen prepared from *Br. melitensis* 16 M or field strain would improve the sensitivity of this test (EL-Gibaly, 1993). Moreover the RBPT is more efficient in the detection of early and chronic brucella infection (Davies, 1971). Also the acidic PH (4.0) of the antigen used in BAPA would inhibit to a certain extent the activity of non specific immunoglobulins and the test could be regarded as a screening test for the detection of ovine and caprine brucellosis. The results of Rivanol test to some extent, are similar to that obtained by BAPA and RBPT and this may be due to that most of the positive reactive goats were in the chronic stage of the disease in which the IgG antibodies were evident, whereas the Rivanol test is specific for detection of IgG antibodies.

According to table (2), the results of positive reactors by TAT at titres. 1/40, 1/80, 1/160, 1/320, were 57.%, 30.76%, 7.69% and 3.84% respectively which means that more than half the reactors were at titre 1/40 while the number of reactors at higher titres decreased gradually. It may explain why the incidence of brucellosis is low in Assiut Governorate because the high titres reactors may give great chance for more spread of the infection than that of lower ones.

The results of positive reactors by Rivanol test table (2), at titres of 1/25, 1/50, 1/100, 1/200, 1/400 were 12.2 %, 18.3%, 14.3%, 18.3% and

36.7% respectively. This pattern does not co-ordinate with that of the TAT test, so further investigations are recommended to correlate between TAT & Rivanol tests .

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Table (1) Results of serological tests

REGION	No of examined animals	TAT			BAPAT			RBPT			Rivanol		
		+ve	±ve	-ve	+ve	-ve	%	+ve	-ve	%	+ve	-ve	%
Assiut region	2426	6	4	2416	0.24	0.45	11	2415	0.45	0.45	12	2414	0.49
Manflout region	8012	15	4	7993	0.18	0.38	31	7981	0.38	0.38	28	7984	0.34
Sedfa region	883	3	3	877	0.33	1.01	9	874	1.01	1.01	6	877	0.67
EL-Ghnaiem region	4964	2	1	4961	0.04	0.06	3	4961	0.06	0.06	3	4961	0.06
Total	16285	26	12	16247	0.15	0.33	54	16231	0.33	0.33	49	16236	0.3

TAT = Tube Agglutination test ; BAPA = Buffered Acidified Plate Antigen Test

RBPT = Rose Bengal Plate Test ; ±ve TAT = titre 1/20 ; -ve TAT = titre 1/10 or less

Table (2) Detailed Results of positive reactors by TAT & Rivanol

Locality	No of examined animals	TAT										Rivanol											
		1/40		1/80		1/160		1/320		Total		1/25		1/50		1/100		1/200		1/400		Total	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Assiut	2426	4	66.6	2	33.3	0	0	0	0	6	1	8.33	3	25.0	2	16.6	4	33.3	2	16.6	12		
Manflout	8012	9	60.0	6	40.0	0	0	0	15	3	10.7	4	14.2	5	17.8	4	14.2	12	42.8	28			
Sedfa	883	1	33.3	0	0	2	66.6	0	0	3	0	0	2	33.3	0	0	1	16.6	3	50.0	6		
EL-Ghnaiem	4964	1	50.0	0	0	0	0	1	50.0	2	2	66.6	0	0	0	0	0	0	0	1	33.3	3	
Total	16285	15	57.69	8	30.76	2	7.69	1	3.84	26	6	12.2	9	18.3	7	14.3	9	18.3	18	36.7	49		

Fig.(1) : % of Incidence of Caprine Brucellosis In Assiut by Different Serological Tests

