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**A SEROLOGICAL STUDY ON BRUCELLA
INFECTION AMONG CATTLE
IN ASSIUT GOVERNORATE**
(With 1 Table & 1 Figure)

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دراسة سيرولوجية عن الإصابة بالبروسيلة بين الأبقار
في محافظة أسيوط

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أجريت هذه الدراسة على عدد ٨٧٧٤ من الأبقار تتبع لأربعة مراكز في محافظة أسيوط (أسيوط - منفوط - صدفا - الغنام). خضعت كل هذه العينات للفحص السيرولوجي للبروسيلة بواسطة اختبارى الروزبنجال والأنتيجن الشريحي المحمض المخمد والعينات الايجابية أجرى لها إختبارى التلزن الأنبويى والريفانول. أسفرت النتائج عن تحديد نسب الاصابة فى الأماكن المختلفة وكانت ١,١٢ ٪، ٠,٣ ٪، ٠,٣١ ٪، و ٢٩ ٪ على الترتيب كما اتضح أن نسبة الاصابة فى المحافظة ٠,٨٩ ٪، ٠,٨٧ ٪، ٠,٦ ٪، ٠,٥٧ ٪ بواسطة الإختبارات المختلفة على الترتيب .

SUMMARY

The brucella seroprevalence among 8774 cattle in four locations (Assiut, Manfalout, Sedfa and El-Ghanaem) belonging to Assiut governorate was estimated. All samples were screened by Rose Bengal plate antigen test (RBPT) and buffered acidified plate antigen test (BAPAT) and positive cases were confirmed by tube agglutination test (TAT) and rivanol tests. The results indicated that the prevalence proportions among different locations were 1.12%, 0.3%, 0.31% and 0.29% respectively. The brucella seroprevalence proportions in Assiut Governorate by different serodiagnostic tests were 0.89%, 0.87%, 0.6% and 0.57% respectively.

Key words: Brucella - Cattle - Assiut

INTRODUCTION

In Egypt, brucellosis is still remaining one of the major disease problems inspite of the intensive governmental efforts to minimize risk of infection . Since half a century, attention was directed to study pervalence of brucellosis among cattle in Egypt. Kamel (1953) estimated that it was 1.1% and 4.4 % in slaughtered baladi and Fresian cattle respectively. Kamel and Abdel-Fattah (1962) recorded it as 23% in Seds Farm, while Hamada *et al*(1963) reported brucella seroprevalence in Egypt 0 % . Said *et al* (1965) recorded an infection rate of 6% in cows. El Gibaly (1969) detected 4.2% of cows as infected, while El-Gibaly *et al* (1975& 1977) recorded percentages of 6.7 & 1.5% respectively. Abdel - Aal (1985) stated that brucellosis among cattle was 15.6% and EL-Sherry (1987) recorded 13.4%. Hamouda (1989) in EL-Behera Governorate found a prevalence of brucellosis as 6.1% of cattle, while it was detected as 10.7% in the same area later on (EL-Gohary and Hattab, 1992). In EL -Minia governorate, kaldes (1990) examined large numbers of cattle and detected 0.97% infected ones. Hamdy (1992) concluded that 7.5% were infected cases during an investigation where cattle samples were collected from 11 governorates.

Several investigations were carried out in Assiut Governorate to recognize the pervalence of the disease among cattle. Nashed (1977) detected 0.8% of cattle as positive seroreactors. Zaghoul and Kamel (1985) recorded the percentage as 2.7% , while Mohamed (1986) Found 3.8% positive cases. In a recent investigation, Gadalla (1991) obtained a brucella surveillance of 1.7% .

The objective of the present work was to derermine the seroprevalence of cattle brucellosis in Assiut Governorate and recognize its epidemiological view in order to formulate a base line data for an eradication program .

MATERIAL and METHODS

I- Locations:

Through the national project of brucella by the General Organization of Veterinary Services and Animal Health Research Institute, four locations in Assiut governorate were chosen to be included in the present study. Each location is a city with some adjacent villages (Manfalout, 28 km north; Sedfa,

40 km south and Ghanaem, 40 km west to Assiut as well as Assiut city with adjacent villages).

II- Animals:

A total of 8774 cattle blood samples were screened by Rose Bengal plate antigen (RBPT) and buffered acidified plate antigen tests (BAPAT). Samples which were positive in either or both tests were confirmed by tube agglutination (TAT) and rivanol tests.

III- Antigens:

All four antigens were obtained from Veterinary Serum and Vaccine Research Institute-Abbassia, Cairo-Egypt. TAT and RBPT were carried according to Alton *et al* (1975). BAPAT was performed as described by Angus and Barton (1984), while rivanol test was applied according to Anon (1984).

RESULTS

The results are shown in Table (1). Brucellosis incidence proportions in different locations by different serodiagnostic tests are represented in Fig (1).

DISCUSSION

In Egypt, The incidence of brucellosis among cattle is still a disputable matter (Zaghloul & Kamel 1985). From the available data, it is striking that great variations are noticed between the results obtained by the former investigators, ranging from 0%, up to 23%. It may be attributed to:

- 1- Certain investigations (Kamel and Abdel Fattah, 1962) were adopted through abattoirs, so it might include only fattening bulls and would exclude the breeding cows which would be of high risk and source of infection if they were positive.
- 2- Or it may be attributed to that some investigations e.g Hamdy (1992) were done at farms or locations where infection actually supervened giving a very high surveillance proportions.
- 3- Variations as low may be due to some investigators. e.g. Said *et al* (1965) who depended upon a single serotest. A single serological test can not detect all cases of bovine, ovine or caprine brucellosis conclusively (Farina 1985).

From the epidemiological point of view, in areas - where the incidence of brucellosis is high - area testing is needed which means that all herds in a circumscribed area should be tested. To be fully successful, area

testing should be completed within the shortest possible time and not exceed more than 3-4 months (Warner 1994). So, the present investigation continued from the beginning of January up to the end of December 1995, and each of the four locations was tested within about three months.

In the present study the prevalence of brucellosis among 8774 tested cattle was 0.57 % which is lower than most of the available records except the result obtained by Hamada (1963) who failed to detect any positive cases. The present prevalence is much lower than those obtained by Kamel & Abdel-Fattah (1963), Abdel-Aal (1985) and El-Sherry (1987) which were 23%, 15.6% & 13.4 % respectively. However, it is slight less than those obtained by Nashed (1977) and Kaldes (1990) which were 0.8% and 0.97% respectively.

It is obvious from table (1) & figure (1) that Assiut showed the highest incidence (1.12%). It had a history of several foci of previous infection in small private herds. Due to the absence of periodical examination of such herds or marketed animals, any infected herd can transmit the infection to the neighbouring one easily or any infected purchased animal can spread the infection to a new free area. The other three locations; Manfalout, Sedfa and El-Ghanaem showed incidences of 0.30%, 0.31% and 0.29% respectively which are approximately the same (Tab 1 & Fig 1).

The screening procedure by RBPT was recommended (Farina, 1985 and Huber & Nicolletti 1986) due to its high sensitivity. Screening by BAPAT was recommended by Hamdy (1992) who concluded that it gave the highest positive rate concerning all animal species comparing with the other four serological tests. In addition, it had the advantage of inhibiting to a certain limit the activity of nonspecific antibodies. From the present results, RBPT and BAPAT detected 0.89% and 0.87% of the tested animals respectively. These proportions were higher than those obtained by TAT (0.6%) and rivanol (0.57%). TAT have a poor specificity comparing with other available tests (Barton 1994), but it is included in the serological tests battery as it detects mainly IgM and IgG classes of antibodies. Allan *et al* (1976) reported that it measured IgM more efficiently than IgG1, while the acidity of screening tests would inhibit the activity of some IgM and enhance the agglutination by IgG (Barton 1994).

Only a single case in the present investigation showed negative TAT but positive rivanol with a titre of 1/25. This is interpreted as TAT has some limitations such as it may miss some chronically infected cases and it is slow in detecting recently infected ones (Davis, 1971). Rivanol test which is a

useful and reliable test in detecting brucellosis infected cows without serious number of false positive (Huber and Nicolleti, 1986) was the dependable test to classify the positive cases in the present work. It is highly specific and an official diagnostic test as it detects mainly the presence of the specific IgG through the precipitation of IgM (Hamdy, 1992) .

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Table (1) The incidence of brucella infection among cattle in Assiut Governorate using four serological tests

Locality	No of Screened animals	Serological tests												Final Conclusion													
		RBPT				BAPAT				TAT						Rivanol test											
		No	%	No	%	-	1/10	1/20	1/40	1/80	1/160	1/320	Total seroreactors	No	%	-	1/25	1/50	1/100	1/200	1/400	Total positive	No	%	-	±	Positives
Assiut	2849	45	1.57	44	1.54	12	1	9	8	5	7	6	55	1.16	13	3	6	4	5	14	32	1.12	11	2	52	1.12	
Manfalout	4585	24	0.52	24	0.52	9	1	2	6	2	3	1	15	0.32	10	2	1	5	1	5	14	0.30	9	1	14	0.30	
Sedfa	650	3	0.46	3	0.46	1	-	1	-	1	-	-	2	0.31	1	-	-	1	-	1	2	0.31	1	-	2	0.31	
EL-Ganaem	690	6	0.87	5	0.72	3	-	3	-	-	-	-	3	0.43	4	-	1	-	-	1	2	0.29	3	1	2	0.29	
Total	8774	78	0.89	76	0.87	25	2	12	14	8	10	7	55	0.60	28	5	8	10	6	21	50	0.57	24	4	50	0.57	

Abbreviations

- RBPT : Rose Bengal plate antigen test
- BAPAT : Buffered acidified plate antigen test
- TAT : Tube agglutination test
- ± : Negative results
- ± : Doubtful results

FIG.(1): INCIDENCE OF CATTLE BRUCELLOSIS IN ASSIUT BY DIFFERENT SEROLOGICAL TESTS

