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BRUCELLOSIS IN NORMALLY SLAUGHTERED CATTLE AND BUFFALOES

(With 2 Tables)

By

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(Received at 30/10/1996)

مرض البروسيلا في ذبائح الابقار والجاموس الطبيعية

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تم إجراء استقصاء للوضع الحالي لمرض البروسيلا في ذبائح الابقار و الجاموس . أعتمد الاستقصاء على فحص عينات الدم للمتلزنات وتبين أن نسبة الحدوث الكلية للمرض تكاد لا تذكر، لكن اكتشاف حيوانات ايجابية بمستويات اجسام مناعية عالية يبعث على القلق نسبة الحدوث كانت أعلى قليلا في الاناث (٢.٦١%) عنها في الذكور (٠.٥٩%) ، (النتائج المسجلة لا تعكس الوضع الحقيقي للمرض على المستوى الاقليمي).

SUMMARY

A survey of the current prevalence of bovine brucellosis in slaughtered cattle and buffaloes had been carried out. The slaughter surveillance was based on the standard examination of serum for brucella agglutinins by the Rose Bengal plate test (RBPT) and serum agglutination test (SAT). The overall incidence of reactors was apparently negligible; most titers were low , but the detection of serologically positive animals with high SAT titres give rise for concern. The incidence was slightly higher in females (2.61%) than in males (0.59%). The present results do not reflect the true situation at the national level.

Key words: *Brucellosis - Slaughtered Cattle & Buffaloes*

INTRODUCTION

Brucellosis is a universal problem for both animal husbandry and for public health. While bovine brucellosis had been reduced or eliminated through organised programmes in several countries, it is increasing in many others. In some of these, there has been an emphasis on expanding animal production programmes including the importation of highly susceptible exotic cattle. They are concentrated in small areas where hygiene may be poor and potential exposure to disease is enormous. The disease rapidly spreads under these conditions and test and slaughter efforts to control it are usually futile.

The enzootic status of brucellosis in Egypt was confirmed by Zaki (1948) who reported an infection rate of 37.5% (SAT) in 200 buffloe-cow sera collected from Cairo abattoir.

This study was undertaken to determine the current brucellosis infection rates in normally slaughtered cattle and buffaloes in Egypt.

MATERIAL and METHODS

Blood collection :

Blood samples were collected from 2138 animals slaughtered at Cairo and Giza abattoirs. The species, breed and sex of each animal was identified and documented at the time of slaughter. About 10 ml of blood was obtained from the severed jugular vein of each animal, allowed to clot and contract. Sera were collected within six hours and stored frozen at -20°C till tested.

Brucella serology

All sera were tested by the Rose Bengal Plate test (RBPT) and the serum agglutination test (SAT) to detect *B. abortus* agglutinins according to standard procedures (Alton *et al.* 1975). The RBPT and SAT antigens of *B. abortus* S-99 were obtained from "Serum and Vaccine Res. Inst. Abbassia, Cairo.

A sero-positive result proves the existence of a past or present infection, since vaccination with *B. abortus* strain 19 which may cause false positive reactions (Nicoletti, 1981) is not routinely done in Egypt.

RESULTS

Fifteen or 0.70% of 2138 sera tested were positive by the RBPT while 22(1.03) were reactors by the SAT (Table 1). The females had an

apparently higher overall infection rate of 2.61 compared to 0.59 in the males. Reacting animals are detailed in Table 2.

Table 1: Prevalence of *B.abortus* agglutinins in slaughtered cattle and buffaloes .

Sex	Species	No. Tested	No.(%)with RBPT agglutinins	No (%) with SAT agglutinins
Males	Baladi	901	2(0.22)	6(0.66)
	Foreign breeds	331	0.(0.00)	1(0.30)
	Buffalo	447	1(0.22)	3(0.67)
Females	Baladi	89	6(6.74)	6(6.74)
	Foreign breeds	7	0(0.00)	0.(0.00)
	Buffalo	363	6(1.65)	6(1.65)
Total		2138	15(0.70)	22(1.03)

Table (2) Brucella antibodies titres in the sera of slaughtered cattle and buffalo

Sex	Species /breed	RBPT	SAT Titres						
			1/10	1/20	1/40	1/80	1/160	1/320	1/640
Males	Baladi	-	4						
		+		1				1	
	Foreign breeds	-	1						
		+							
	Buffalo	-	2						
		+				1			
Females	Baladi	-							
		+	2	1	1	1			1
	Foreign breeds	-							
		+							
	Buffalo	-							
		+	1		4	1			

DISCUSSION

Brucellosis, being a zoonosis, is a veritable danger for the national health. Accurate means of assessing the extent and distribution of the disease are necessary in order to plan control programmes. Serological surveillance remains the principal method by which foci of brucella infection are identified in cattle populations (Chavez and Cruz, 1989).

In the USA, for example, the Market Slaughter Testing (MST) surveillance system (testing blood of all cattle at abattoirs) is the primary bovine brucellosis surveillance system (Deyoe, 1980). Its effectiveness is based on the fact that most owners regularly cull or sell surplus cattle from their herds. Animals are identified as to their origin either at farms or at the first point of destination with back tags. A blood sample, identified by the back tag number of the animal, is collected from each animal at slaughter establishments and tested for brucellosis. If reactors are found, they are traced back to their herds of origin through the back tag number and further testing is carried out.

It has been found that suitable employees in abattoirs can be readily trained to collect and correctly identify blood samples with corresponding carcasses, and to carry out routine testing using Rose Bengal antigen (Browne, 1974).

It seems that carcasses derived from cattle giving negative reactions in the RBPT would have a high probability of being free from brucellosis (Browne, 1974).

The application of the RBPT as a screening test and the SAT as a confirmatory for slaughter surveillance programmes is therefore recommended for Egypt and other developing.

A pilot study was undertaken to investigate the presence of brucellosis in bovines slaughtered at Cairo and Giza abattoirs, in order to establish baselines for control measures if feasible and to compare the prevalence with other findings of research workers. Although based on a relatively small number of animals, the work confirms the occurrence of brucella agglutinins in slaughtered animals. If the 1.03% (SAT) reactor incidence is valid, many hundreds of brucella agglutinin reacting animals are slaughtered per year.

In as much as there were no distinguishing macroscopic lesions in brucella infected cattle, none are condemned at PM for brucellosis, and all find their way into retail channels in one form or another. The findings of reactors with high SAT titer deserve active consideration by the health

authorities .At least all abattoir staff must be informed that reactor and infected stock are to be slaughtered. Minimal doses of brucella organisms would be expected to be found in meat, may cause infections of a low grade unrecognized or misdiagnosed (Sadler, 1960). Although, the current brucellosis infection rate in man in Egypt is unknown because there is no nationwide survey, animals are the only known sources of infection to man. Brucellosis infection rates in man and animals are also known to correlate positively in many cases (Schwabe , 1969).

It may be important to note that the brucellosis infection rate in buffaloes-cows had decreased significantly from 37,5% in 1948 as stated previously to 1,65% in 1996 (Table 1).

However, the results of this study cannot be assumed to be the prevailing infection rate. They simply reflect the probable infection rate in the areas from which the animals originated. Our findings are not in full agreement with results obtained by other workers. Hamada *et al.* (1963) tested blood samples collected from animals slaughtered at Cairo and Giza abattoirs. All examined sera from cattle gave negative results, while the rate of infection among buffaloes was 0.46% (2/439). Lotfi *et al* (1987) reported incidence rate of 3.2% and 0.5% in cattle and buffaloes slaughtered in upper Egypt

The detection of higher antibody titres in females than in males is in agreement with the previous findings of Christie *et al.* (1968). It would appear that female animals are generally more susceptible to brucella infection , especially during pregnancy, than are the males.

As blood sampling at abattoirs is of great value for screening purposes (Alton *et al.*, 1964) , in Egypt for this procedure to be effective if applied, it is essential that the animals can be traced back to the herd or at least the area of origin. Absolute essential ingredients are good animal identification and records so that reactors may be traced to the correct farm of origin. This will be encouraged by the presence of financial support to cover compensation for slaughtering the reactors.

REFERENCES

- Alton, G., Van Drimmelen , G. and Elberg, S. (1964): Joint FAO/ WHO Expert Committee on brucellosis. Fourth Report. FAO .Rome.
Alton, G.; Jones, L. ; and Pietz, D (1975): Lab. techniques in brucellosis. Sec. Edition. WHO. Geneva.

- Browne, E. (1974): An adaptation of the RBPT for the diagnosis of brucellosis at abattoirs. Aust.Vet. J., 50,3,127.*
- Chavez, P. and Cruz, R. (1989): Epidemiological evolution of foci and the prevalence of bovine brucellosis in Cuba during the period 1981-87. Revista Cubana de Ciencias Veterinarias , 20 (2) 165-180*
- Christie, T.; Kerr, W. and Maccaughey, W.(1968): Brucellosis eradication in N. Ireland. Vet . Rec . 82 : 176-183.*
- Deyoe, B. (1980): Bovine Medicine & Surgery . Edited by H. Amstutz Sec . Edition Vol . I. Am . Vet . Pub., Inc . California*
- Hamada, S.; El-Sidik, M.; Sherif, L. and Yousef, M. (1963): Serological investigation on brucellosis in cattle, buffaloes and camels. J.Arab Vet. Med Ass., 23:173-178.*
- Lotfi, A.; Yossef, H.; El-Khatib, T.; Samira El-Gibaly and Gafar, M. (1987): Brucellosis in slaughtered carcasses in upper Egypt. Assiut Vet . Med .J. 19,37,101-105.*
- Nicoletti, P. (1981): Prevalence and persistence of B .abortus S19 infections and prevalence of other biotypes in vaccinated adult dairy cattle. J.Am. Vet. Med .Ass. 178: 143-145.*
- Sadler, W. (1960): Present evidence on the role of meat in the epidemiology of Human Brucellosis, Amer. J. Publ. Hlth. 50,4,504-513.*
- Schwabe, C. (1969): Veterinary Medicine and Human Health, 2nd Edn. The Williams & Wilkins Co., Baltimore, USA*
- Zaki, R. (1948): B. abortus infection among buffaloes in Egypt. J.Comp. Path., 58,73-79.*