

## BRUCELLA INFECTION IN HUMAN BEINGS

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### ABSTRACT

Sera collected from human beings between 1994-96 were tested for brucella anti-bodies, with 46 of 677 (6.79%) samples reactive. The reactor rate was highest in the persons who were directly in contact with livestock followed by the persons indirectly in contact with animals, whereas, reactor rate was minimum in the persons living in the cities and do not have any direct or indirect contact with animals.

### INTRODUCTION

Many serological studies have demonstrated the frequency and to a limited extent, the geographic, temporal and practice type distribution of brucellosis in veterinarians and veterinary students (Schnurrenberger *et al.*, 1975). Still very little attempts have been made to explore the infections in human beings who are not professional veterinarians but are living in different environments i.e. villages and cities, further more subject has never been explored in depth to determine when and why these infections occur. Although control of brucellosis in man can not be made till the eradication of disease from domestic animals. Increased knowledge could lead to prevention of many human cases. Present study is concerned with detailed epidemiological investigations of brucella infections in human beings.

### MATERIALS AND METHODS

Blood serum sample of persons who were coming to different hospitals and clinical labs. for the treatment of different ailments were collected with the co-operation of incharge clinical labs. general practioners running private hospitals overs a period of 3 years i.e. 1994-96.

From the address of the patients they were categorized in one of the three groups i.e. those directly in contact with livestock (Groups A). Living in villages and possess animals but do not handle them (Group B) and those living in cities (Group C). An interview of each patient was carried out and information about, where he lives, do he keeps animals, age and sex to categorized him in one of the three groups.

#### Serum Agglutination Test (Stemshaorm *et al.*, 1985).

Each serum samples was tested in duplicate. Serial two fold dilutions of the test serum starting from 1:10

upto 1:640 (volume 0.5 ml) were prepared in phenol saline (0.85% NaCl solution containing 0.5% phenol). The antigen was diluted (as per instructions of Veterinary Research Institute) and an equal amount was added to each tube. Contents of the tubes were mixed thoroughly and incubated at 37°C for 24 hours. The degree of agglutination was determined by the degree of clearing without shaking the tubes. Known negative and positive sera were used as controls.

Complete agglutination and sedimentation with 100 per cent clear supernatant was marked as four (++++). Similarly 75, 50, 25 per cent were marked as three, two and one plus, respectively. No agglutination and no clearing was considered as negative.

The highest serum dilution showing 50 per cent clearing (++) was considered as titre of that serum. A titre of 1:40 or higher was considered as positive per recommendations of FAO/WHO Expert Committee on Brucellosis (Alton *et al.*, 1975).

### RESULTS AND DISCUSSION

The percentage of serum reactive at 1:40 or greater was recorded to be 14.17, 4.65 and 0.90 per cent in group A, B and C, respectively (Table 1), with an overall prevalence of 6.79 per cent.

Table 1. Incidence Of Positive Reactors to Brucellosis

Groups	No. of serum	Positive	Prevalence (%)
A: Direct contact	240	34	14.17
B: In-direct contact	215	10	4.65
C: Cities	222	2	0.90
Total	677	46	6.79

Table 2: Sex Wise Prevalence of Brucellosis

Group	Sex	Prevalence(%)	Overall Prevalence (%)
Direct contact	M	24/150 (16.00)	34/240 (14.17)
	F	10/90 (11.11)	
Indirect contact	M	6/129 (4.65)	10/215 (4.65)
	F	4/86 (4.65)	
No-contact	M	2/121 (1.65)	2/222 (0.90)
	F	0/101 (0.00)	
Overall	M	32/400 (8.00)	46/677 (6.79)
	F	14/177 (4.83)	

Table 3: Agglutination Titres of Human Beings

Titres	Direct Contact (A)	Indirect Contact (B)	Non-contact
40	7	2	2
80	5	3	-
160	8	1	-
320	12	4	-
640	2	-	-
G.M.T	150.50	129.96	40.0

The sex wise distribution of brucellosis in human beings revealed a non significant ( $P > 0.05$ ) difference in occurrence of this malady. The reason might be equal chances of exposure of man and woman to infection or infected animals. Whereas, mathematically prevalence in males was higher than in females (Table 2) which perhaps could be attributed to the fact that men has greater chance of coming in contact with animals then women.

The overall geometric mean titres were also on the rise in group A (Direct contact group) which indicates the presence of source of infection in the environment (Table 3). Out of the females sero-positive for brucellosis 5 had the history of abortion which might also be due to brucellosis.

Eradication of brucellosis has to wait its eradication from livestock. Almost all species of domestic and wild animals and birds are susceptible to brucellosis. A

number of research worker (Ahmad *et al.*, 1990; Delaimi and Ali, 1990; Durani, 1993; Ahmad *et al.*, 1994; Chatterjee *et al.*, 1996; Ahmad and Munir, 1996) have reported prevalence of brucellosis in cattle, buffaloes, sheep, goats, dogs, pigs, crows, vultures etc. The brucellosis is a zoonotic disease which is transmitted from animals to man and vice versa. The presence of brucellosis in dogs and birds is especially a situation of concern. The brucella organism can pass intact skin and can live in water upto 100 days and on soil upto 30 days, this necessitates strict hygienic vigilance. The brucellosis in human beings has also been reported by various other workers. Masoumi *et al.* (1992) reported prevalence of 0.95% which is much less to the over all prevalence recorded in the present study, this prevalence can be attributed to the fact that he collected all the samples from citizens of Lahore city. However, Randhawa and Dhillon (1974); Schnurrenberger *et al.* (1975) Kulshreshtha *et al.* (1978) and recorded a prevalence of 10.7, 8.0 and 17.8 per cent respectively which is considerably higher incidence. The present findings support the information provided by Ahmad *et al.* (1994) and Ahmad *et al.* (1995), which are very close to the present observations. Presence of brucella infection in human beings in near future, may be detrimental.

Brucella infection in human beings has been reported to have an association with diabetes mellitus (Schnurrenberger *et al.*, 1975), some workers have suggested an association between brucella infections and heart disease which could be a factor in reduced life span, but this association has not been supported by a large data or by other scientists.

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