Incidence of Human Brucellosis in Kathmandu

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Abstract:

Serological investigations were made on the incidence of human brucellosis in Kathmandu Valley. Total of 2117 human serum were tested by employing different serological tests. Of which 57 serum were found positive titre for Brucella and the incidence rate recorded was 2.7 percentage. Age and sex wise incidence rates were 4.5, 5.6, in males and 3.1 and 2.1 in females of 0-14 years and above 15 years age group respectively. This study has revealed that human brucellosis is a problem of both public health and economic importance.

Introduction :

Brucellosis is a disease of human and animals. This disease is called by different names in both man and animal. In man brucellosis is also called Undulant fever, Malta fever, Gibraltar fever and Mediterranean fever whereas in animals it is called contagious abortion, abortus fever, infectious abortion, epizootic abortion, Bang's Disease and ram epididymitis. An indication of the occurrence of the infection in man is given by its prevalence in animal reservoirs. Since brucellosis is not generally transmitted from person to person, the prevention and control of human infection depends upon the control and elimination of the disease in animals.

The prevalence of brucellosis in Nepal among different species of domestic animals as well as among humans have been studied by different scientists. Brucellosis has been incriminated in various species of animals such as cattle, buffaloes, sheep, goats, yaks, mules, horses, mules and chauri as well. Prevalence rate was observed in water-buffaloes 22.64%, in cattle

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17.47 %, in sheep 1.54 % in one of the study (Pyakural et al 1977). In other study the percentage of prevalence recorded was approximately 35.3 in sheep, 19.8 in buffaloes, 15.0 in dogs, 12.5 in poultry, horses and mules. 10.1 in cattle and 7.3 in goats (Joshi et al 1974 a). In one of our study prevalence of brucellosis in sheep and goats (76 tested) was 23% (Joshi et al 1974 b). When the author made a serological survey first time in Nepal in 1973 the prevalence rate in different species of animals was 14.2 in cattle (35 tested), 10.0 in goats (70 tested), 12.5 in horses and mules (40 tested), 37.5 in dogs (8 tested), 36.0 in Poultry (25 tested) (Joshi 1976). Incidence of human brucellosis was studied serologically and seropositive rate was 1.65 % in Kathmandu, 1.49 % in Pokhara and 5.2 % in Solukhumbu population (Pyakural, 1980).

The present study was therefore undertaken to study the incidence of human brucellosis serologically and to assess the magnitude of the problem in Kathmandu Valley.

Materials and methods:

In all 2117 human serum samples were collected from outdoor and clinically suspected brucellosis indoor patients of Bir hospital and Infectious Diseases Hospital, Kathmandu. All these serum samples were subjected to plate, standard tube agglutination and 2-Mercapto-Ethanol tests employing the standard techniques (Alton 1967). The *Brucella* antigens for plate and tube tests were obtained from Central Veterinary Laboratory, Weybridge, England. Interpretation of the results was based on the standard laid down by the FAO/WHO Expert Committee 1964.

Results:

Serological test results of plate, tube and 2-ME tests are presented in Table 1. A titre of more than 80 international units (IU) was considered positive. The serum agglutination test reveals both the IgM and IgG antibodies. In active stage of brucellosis the IgG is always present but in chronic cases presence of IgG is low and IgM high, therefore 2-ME test should be carried to reveal the presence of IgG and not IgM.

Sera samples from male and female of 0-14 years and above 15 year of age group were tested and incidence rate was 4.5 in male children, 5.6 in female children, 3.1 in male adult and 2.1 in female adult and total results are presented in Table 2 and 3.

Table 1
Total Human Serum Tested For Brucellosis
From April 1981 to March 1982

Month	Number of human serum tested by different methods				Incidence %
	PT	STAT	2MET	Positive	
April	198	122	120	22	11.11
May	234	30	30	6	2.56
June	174	20	15	1	0.57
July	225	10	10	6	2.67
August	238	-	-	-	-
September	140	-	-	-	-
October	175	5	5	1	0.57
November	208	16	15	16	7.69
December	102	-	-	-	-
January	186	80	70	3	1.61
February	203	156	155	2	0.98
March	33	32	32	-	-
Total	2117	471	452	57	2.69

NB: P- Plate Test, STAT- Standard Tube Agglutination Test, 2-MET - 2- Mercapto Ethanol Test.

Table

Age and Sex Wise Human Serum Brucella Test Result
From April 1981 to March 1982.

Months	0-14 Year						Above 15 Years						Total
	Male			Female			Male			Female			
	ST	P		ST	P		ST	P		ST	P		
April	2	-		-	-		111	15	85	7	198	22	
May	2	-		2	-		128	2	102	4	234	6	
June	3	-		-	-		106	1	65	-	174	1	
July	4	-		1	-		125	5	96	1	225	6	
August	2	-		1	-		135	-	102	-	238	-	
September	1	-		3	-		81	-	55	-	140	-	
October	1	-		4	-		89	-	81	1	175	1	
November	4	1		5	1		122	11	77	3	208	16	
December	-	-		1	-		54	-	47	-	102	-	
January	-	-		-	-		105	1	81	2	186	3	
February	3	-		1	-		167	1	92	1	203	2	
March	-	-		-	-		18	-	15	-	33	-	
Total	22	1		18	1		1179	36	898	19	2117	57	

NB: ST- Serum Tested, P- Positive.

Table 3
Age and Sex Wise Incidence Rate of Human Brucellosis
From April 1981 to March 1982.

Months	Incidence Rate in Percentage				
	0-14 Years		Above 15 Years		Total
	Male	Female	Male	Female	
April	-	-	13.5	8.2	11.11
May	-	-	1.6	3.9	2.56
June	-	-	0.9	-	0.57
July	-	-	4.0	1.0	2.67
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	1.2	0.57
November	25	20	9.0	3.9	7.69
December	-	-	-	-	-
January	-	-	0.9	2.5	1.61
February	-	-	0.6	1.1	0.98
March	-	-	-	-	-
Total	4.5	5.6	3.1	2.1	2.69

Discussion :

Prevalence of brucellosis in different species of animals has not been systematically studied countrywide in Nepal. The present study was undertaken to obtain some data regarding the incidence of human brucellosis in Kathmandu Valley.

In the study the incidence appears to be high in male adult and in female adult. Regarding the incidence figures in male and female child the study is not significant because of the number of serum samples tested were too small. In total during this 12 months study period the incidence rate was 2.69 percentage in all age and sex groups of population, which may be significant from public health point of view.

With regards to per capita holding of livestock, Nepal stands on top, having 5.8 heads

of animals per household, on the other hand the availability of per capita meat and milk is very poor, amounting to 4 Kg of meat and 35 litres of milk per year. It has been fully understood that man gets brucellosis infection from animals either through consumption of infected animal products or by direct contact with the infected animals. It is obvious that the human brucellosis can be reduced or prevented or controlled only by keeping their livestock free from this disease which can be achieved only from a joint approach of Zoonotic Diseases Control Section of the Department of Health Services and the Department of Livestock Development and Animal Health.

So far no effective measures or project plans are implemented towards the control of animal brucellosis in Nepal. There are various methods formulated and published for the control of animal brucellosis such as FAO/WHO Expert Committee Report on Brucellosis 1964. But now recently, VPH/CD Division of WHO/HQ Geneva has published "A Guide to the Diagnosis, Treatment and Prevention of Human Brucellosis". This guide is concerned with epidemiology, pathology and also provides for laboratory examinations, diagnosis and gives details on health education of the public in programmes for prevention and control of the disease.

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References.

1. Elberg, S Sanford Ed. (1982) A guide to the Diagnosis, Treatment and Prevention of Human Brucellosis. WHO/HQ, Geneva.
2. Joint FAO/WHO Expert Committee on Brucellosis, Fourth Report (1964).
3. Joshi, D.D. (1973). A Serological Survey of Animal Brucellosis in Kathmadu. Bull. Vet. Sc. & A.H. Nepal Vol. 5 pp 32-37, 1976.
4. Joshi, D.D. Shukla, R.R. and Pyakural, S (1974 a). Studies on Diseases of Domestic Animals and Birds in in Nepal. III Preliminary observation on the prevalence of Tuberculosis, para-Tuberculosis and Brucellosis at Livestock Farm, Pokhara. Bull. Vet. Sc. & A. H.

Nepal VI. 3 pp 1-9.

5. Joshi, D. D., Pyakural, S and Shukla, R. R. (1974 b) Studies on Diseases of Domestic animals and Birds in Nepal. V. Serological Evidence of Brucellosis. The J. Com. Dis. 6 (4) 1974, pp. 325-328.
6. Pyakural, S and Mishra, U. (1977). Sero-Epidemiological Evidence of animal Brucellosis. Bull. Vet. SC. & A.H. Nepal Vol. 16 pp-1-6.
7. Pyakural, S. (1980). Brucella Agglutinins in Human Serum in Nepal. Bull. Vet. Sc. & A.H. Nepal Vol. 8, pp.9-14.

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