

Prevalence of Brucella antibodies in Sheep and Goats in Maharashtra

S.N. Suryawanshi¹, P.A.Tembhurne², S. Gohain³, and V.C. Ingle⁴,

1. Deputy Commissioner Animal Husbandry, Western Regional Disease Diagnostic Laboratory, Aundh, Pune 411 007. 2, 3 & 4. Department of Veterinary Microbiology, Nagpur Veterinary College, MAFSU, Nagpur

Corresponding author e-mail:.....

ABSTRACT

To study the prevalence of brucellosis in sheep and goats, a total of 181 and 164 serum samples were collected from apparently healthy sheep and goats respectively of different age and sex from four districts of Maharashtra. All the samples were screened for brucella antibodies by employing RBPT test. An overall prevalence of 7.32% and 17.68% was observed in goats and sheep respectively. District wise prevalence indicated 15.00% prevalence of brucellosis in goats in Akola district followed by Sangli (7.50%), Nagpur (5.00%) and Nashik (2.30%) and 20.00% prevalence of brucellosis in sheep in Nashik district followed by Nagpur (19.50%), Akola (18.33%) and Sangli (12.50%). Age wise prevalence indicated 21.43% prevalence in sheep between 2-3yrs and 10.17% in goats above 3 yrs of age. Sex wise seroprevalence indicated prevalence of 25.00% and 24.00% in male sheep and goats respectively and 17.16% and 4.32% in female sheep and goats respectively. From the present study it is concluded that brucellosis is endemic in India. Further studies are required to reveal the complete scenario of sero prevalence of the brucellosis in Maharashtra.

Key words: Brucellosis; Prevalence; Sheep and Goats;

Brucellosis is a bacterial zoonotic disease affecting live stock and human. Brucellosis is amongst the most important diseases, in terms of loss to economy that affects sheep and goat population in the developing countries (Bernues, A. E. Manrique and Maza, 1997 and Dijkhuizen, et al. 1995). It is a contagious disease caused by bacteria of genus *Brucella*. *Brucella melitensis* is considered to be the most important cause of abortion, reduced fertility, increased neonatal losses and leads to emergency slaughtering of the infected animal (Abdul-Aziz and Shenkel 1990). Ovine and caprine brucellosis due to *B. melitensis* is widespread in the country (Das and Dutta 1961 and Ghosh and Verma 1985) and is considered to be the most important disease due to its economic impact where it has an adverse effect on total animal protein supplies, and severe hazard it represents to human health (Abeer et al. 2003)

Sheep brucellosis can be divided into classical brucellosis and ram epididymitis. Ram epididymitis is caused by non-zoonotic agent *B. ovis*, while classical brucellosis is caused by *B. melitensis* and constitutes a major public health threat equal to goat brucellosis (Acha and

Szyfres 2003). Small ruminants are considered to be the means of livelihood for many marginal farmers and contribute to national economy through various products and by products. In view of paucity of literature on prevalence of brucellosis in Maharashtra, present study was undertaken.

METHODOLOGY

A total of 181 and 164 serum samples were collected from apparently healthy sheep and goats respectively of different age and sex from four districts of Maharashtra. The serum samples were stored at -200C till screened. All the samples were screened for Brucella antibodies by employing RBPT test. The RBPT diagnostic reagent was procured from Division of Veterinary Biological Products, IVRI, Izatnagar, Bareilly.

RESULTS AND DISCUSSION

In the present study an overall prevalence of 7.32% was observed in goats. These findings are in agreement with the earlier findings of Muralini and Ramasastry (1999), Kalorey et al. (2000), Paul

(2000), Charanjeet *et al.*(2004), Kumar *et al.*(2009) and Singh *et al.*(2010) who reported prevalence of 7.00 % ,9.09 % , 11.44%,5.40%,4.00% and 5.8% respectively in goats.

An overall prevalence of 17.68% was observed in sheep. These findings are in agreement with the earlier findings of Paul (2000) and Charanjeet *et al.*(2004) who reported prevalence of 12.66% and 15.60% respectively in sheep.

Little lower prevalence of 3.33%, 5.00%, and 6.50% was reported respectively by Muralini and Ramasastry (1999) Singh *et al.* (2010) and Iram *et al.* (2013).

District wise prevalence indicated 15.00 % prevalence of brucellosis in goats in Akola district followed by Sangli (7.50%), Nagpur (5.00%) and Nashik (2.30%) and 20.00% prevalence of brucellosis in sheep in Nashik district followed by Nagpur (19.50%), Akola (18.33%) and Sangli (12.50%). Seroprevalence of brucellosis in apparently healthy sheep and goats of four districts is presented in Table 1.

Table 1. District wise seroprevalence of brucellosis

District	Sheep			Goats		
	Samples screened	Samples positive	% positivity	Samples screened	Samples positive	% positivity
Nagpur	41	8	19.51	40	2	5.00
Nashik	40	8	20.00	44	1	2.29
Sangli	40	5	12.50	40	3	7.50
Akola	60	11	18.33	40	6	15.00
Total	181	32	17.68	164	12	7.32

Table 2. Age wise seroprevalence of brucellosis

Age groups	Sheep			Goats		
	Samples screened	Samples positive	% positivity	Samples screened	Samples positive	% positivity
0-1yr	24	4	16.67	28	0	0.00
1-2yr	37	6	16.22	36	2	5.60
2-3yr	56	12	21.43	41	4	9.80
> 3yr	64	10	15.63	59	6	10.17
Total	181	32	17.68	164	12	7.32

Table 3. Sex wise seroprevalence of brucellosis

Sex	Sheep			Goats		
	Samples screened	Samples positive	% positivity	Samples screened	Samples positive	% positivity
Male	12	3	25.00	25	6	24.00
Female	169	29	17.16	139	6	4.32
Total	181	32	17.68	164	12	7.32

Age wise prevalence indicated 21.43% prevalence in sheep between 2-3yrs and 10.17% in goats above 3 yrs of age. Age is probably the most important factor in brucellosis because the risk of disease is more closely related to age than other factors. Thus age should always be taken into consideration while describing the seroprevalence of disease (Martin, 1993). Similar type of findings were made by Charanjeet *et al.*(2004) who reported 20.70% and 10.20% prevalence in sheep and goats above three yrs of age. The age wise comparison of seroprevalence among goats in the current study was having similar trend of increasing seropositivity with advancement of age as reported by Genc *et al.*(2005). Age wise seroprevalence of brucellosis depicted in Table-2.

Sex wise seroprevalence indicated higher prevalence of 25.00% and 24.00% in male sheep and goats respectively and 17.16% and 4.32% in female sheep and goats respectively. Sex wise seroprevalence of 29.16% and 3.60% in male sheep and goats respec-

tively and 8.60% and 3.41% in female sheep and goats respectively has earlier been reported by Charanjeet *et al.* (2004). Though higher prevalence was observed in males, the little higher prevalence in females also might be due to high erythritol content of placenta that facilitates the establishment and multiplication of brucella organisms in gravid uterus (Bala and Sidhu 1982). Sex wise seroprevalence of brucellosis is presented in Table-3.

CONCLUSION

From the present study it is concluded that brucellosis is endemic in India. Further studies are required to reveal the complete scenario of sero prevalence of the disease in Maharashtra and using various brucellosis diagnostic techniques.

Paper received on : September 20, 2014

Accepted on : October 23, 2014

REFERENCES

- Abdul-Aziz, N and Shenkel, F. (1990) Brucellosis in small ruminants in Jordan. In: Schenkel, Weiland (Eds). Proceedings of the Conference on Economically Significant Reproductive Disorders in Small Ruminants, Amman Jordan. 6-10 May 1990.
- Abeer, H. A., Shawkat, Q. L., and Al-Tarazi, Yasser (2003) in Epidemiology of ovine brucellosis in Awassi sheep in northern Jordan. *Prev. Vet. Med.*, **60**: 297-306
- Acha, N. P. and Szyfres, B. (2003) *Zoonoses and Communicable Diseases Common to Man and Animals*, 3rd ed., vol. 1. Pan American Health Organization (PAHO), Washington, DC.
- Bala, A.K. and Sidhu, N.S. (1982). Studies on disease resistance vis-à-vis susceptibility in farm animals III, genetic group difference for the prevalence of Brucellosis in Cattle. *Indian J. Anim. Health*, **21**:61
- Bernues, A. E. Manrique and Maza, (1997) Economic evaluation of bovine brucellosis and tuberculosis eradication programme in a mountain area of Spain. *Pre. Vet. Med.* **30**: 137-149.
- Charanjeet, Mandeep Sharma, R.C.Katoch, Prasenjeet Dhar and Rajinder Kumar (2004) Application of RBPT, SAT and Avidin-Biotin Serum ELISA for detecting Brucellosis among livestock in Himachal Pradesh. *Indian J. Comp. Microbiol. Immunol. and Infect Dis.* **25 (1)**: 15-18.
- Das, T. P. and Dutta, S. N. (1961) Prevalence of Brucella reactors among goats and sheep in Orissa. *Indian Vet. J.*, **38**: 547-550.
- Dijkhuizen, A. A., Hurine R. B. M. and Jalvingh, A. W. (1995) Economic analysis of animal disease and their control. *Prev. Vet. Med.* **25**: 135-149.
- Genc, O., Otlu, S., Sahin, M., Aydin, F. and Gokce, H.I. (2005). Seroprevalence of Brucellosis and Leptospirosis in Aborted Dairy Cows. *Turk. J. Vet. Anim. Sci.*, **29** : 359.
- Ghosh, S. S and Verma, P. C. (1985) Prevalence of Brucellosis in sheep and goats in Nagaland. *Indian Vet. J.*, **62**:339-340
- Iram Mushtaq Lone, M. Ashraf Baba, M. Maroof Shah, Asif Iqbal and Aabeen Sakina (2013) Seroprevalence of brucellosis in sheep of organized and unorganized sector of Kashmir valley, *Vet World* **6 (8)**: 530-533,
- Kalorey, D.R., Ingle, V.C. and Kurkure, N.V. (2000) : Seroprevalence of brucellosis in livestock and humans in Vidarbha region. *Indian J. of Anim. Sci.* **70** : 149-150
- Kumar, A., Sadish, S., Latha, C.S. Kumar, K. and Kumar, A. (2009) Seroprevalence of brucellosis in bovines and caprines. *Indian J. Comp. Microbiol. Immunol. and Infect Dis.* **30(2)**: 133-134
- Martin, C.R., Meek, A.H. and Willeberg, P. (1993) *Veterinary Epidemiology* 1st Indian Edition, pp81
- Muralini and Ramasastry (1999). Serological Survey on the occurrence of Brucellosis in domestic Animal and Man in Andhra Pradesh. *Indian Vet. J.* **76**:483
- Paul (2000) Surveillance of some infectious diseases in cattle, buffaloes, sheep and goats with special emphasis on high hills temperate dry climate zone of Himachal Pradesh. M.V.Sc. Thesis Submitted to CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.
- Singh, Arashdeep, Rajesh Agrawal, Rajeev Singh and Nishi Pande (2010). Sero-prevalence of some important diseases of small ruminants in Jammu Division. *Journal of Research. SKUAST-J*, **9 (1)**:7-12

