

SEROPREVALENCE OF BOVINE HERPES VIRUS -1 IN UTTAR PRADESH

RASHMI SINGH and SHARAD YADAV¹

Department of Veterinary Epidemiology and Preventive Medicine, College of Veterinary and Animal Sciences
Pt. Deen Dayal Upadhyaya Veterinary University, Mathura-281 001

ABSTRACT

Bovine herpes virus 1 (BHV-1) is a worldwide distributed viral pathogen of cattle, associated with a complex of clinical diseases viz., infectious bovine rhinotracheitis (IBR), infectious pustular vulvovaginitis (IPV), infectious pustular balanoposthitis and generalized disease conditions in new born calves. The status of BHV-1 is not well studied/ established in Indian cattle. Therefore, in the present study the seroprevalence of BHV-1 was undertaken using indirect ELISA kit method in both organized and unorganized herds in different areas of Uttar Pradesh (India). A total of 312 blood samples of cattle (of 1-4 years age) from various farms and gaushalas and 180 blood samples of cattle from unorganized herds were collected and analysed. Of the 492 samples, 159 samples were found positive for IBR antibodies with an overall prevalence of 32.31%. Based on antibody based indirect ELISA, 135 and 24 samples were found positive in organized and unorganized herds, respectively. The BHV-1 was more prevalent in organized herds (43.3%) than unorganized herds (13.2%) and was recorded in animals with history of reproductive disorders. In organized herds, overcrowding, improper management and unhygienic practices may be the predisposing factors of BHV-1 infection.

Key words: Bovine Herpes virus, seroprevalence, cattle

Infectious bovine rhinotracheitis (IBR) is a serious economic problem for large livestock facilities all over the world. Only a few countries are known to be free of IBR. Approximately 50% of the adult cattle population has had experience of this disease. IBR is of economic importance to both dairy and beef herds. The main financial loss following IBR in a dairy herd is due to drop in milk production. For beef, it results in a longer time to reach slaughter weight. The greatest economic impact comes from losses resulting from abortions, which occur chiefly during the last half of gestation. Several countries have recognized the losses caused by the disease and have initiated eradication programmes through vaccination schemes. The present study was conducted to determine the prevalence of bovine herpes virus-1 (BHV-1), the causative agent of IBR, in cattle.

MATERIALS AND METHODS

A total of 312 blood samples were collected from cattle of 1-4 years age from various farms and gaushalas (organized herds). In addition, 180 blood samples collected from unorganized herds. Serum was separated and was stored at -20°C for further processing. ELISA kit (IBR-ab ELISA kit) was procured from Svanovir, Sweden for the determination of antibody titre

in the serum and protocol being followed as per the kit. Calculations of results were done by determining corrected OD Values (ODCORR) and percent positivity values. The result were interpreted as: % Positivity less than 7 (negative), 8-12 (Doubtful/Retest) and more than 12 (positive).

RESULTS AND DISCUSSION

In this study, ELISA was performed on large population of animals from organized and unorganized herds from state of Uttar Pradesh (India). In our study, overall seropositivity was found to be 32.31%. Similar studies were conducted by various workers and obtained similar type of results viz. Suresh *et al.* (1999), Chinchkar *et al.* (2002), Dhand *et al.* (2002), Sarmathi *et al.* (2002) and Raghuvanshi and Kumar (2003) with seropositivity of 38.01%, 32.26%, 28.76%, 27.4%, and 22.22%, respectively. The higher seropositivity varying from 42% to 89% has been reported earlier using ELISA (Lyaku *et al.*, 1991; Suresh, 1992; Pandita and Shrivastava, 1993 and 1995). In contrast, Rajesh *et al.* (2003), Jai *et al.* (2005) and Jain *et al.* (2006) observed a lower seropositivity of 14.88%, 17.68% and 10.39%, respectively employing ELISA.

The seroprevalence was significantly lower in unorganized herds (13.2%) as compared to organized

¹Corresponding author

Table 1
Seropositivity of BHV-I in cattle from organized and unorganized herds

Place of sample collection	No of samples collected	No of samples positive for BHV-I (%)
Organized herd		
Gaushalas	165	99 (60%)
Dairy farms	113	34 (30%)
Semen collection centers	34	2 (5.8%)
Total	312	135 (43.2%)
Unorganized herd		
Bareilli mandal	40	5 (12.5%)
Etawah		30 6 (20%)
Mainpuri	20	3 (15%)
Meerut		45 0 (0%)
J. P. Nagar	25	6 (24%)
Muradabad	20	4 (20%)
Total	180	24 (13.2%)
Overall Total	492	159 (32.3%)

herds (43.3%). More or less similar results were reported by Dhand *et al.* (2002); their study was undertaken on six organized farms and some unorganized farms in Punjab, India, to determine the seroprevalence of IBR. Of the 138 animals tested in organized farms, 48.55% were positive. Out of 401 samples from unorganized herd, 21.9% samples were positive. The seroprevalence was significantly lower in unorganized farms (21.9%) compared to organized farms (48.55%). In individual farms, prevalence ranged from 37.5-68.75% (Dhand *et al.*, 2002).

In this study, individual herd prevalence varied from 5.8%-90%. Highest prevalence was recorded in Pagal baba gaushala (Mathura) (90%) and Babugarh dairy farm (Gaziabad) (86.9%). Babugarh dairy farm was studied in detail in this study. Babugarh farm's animals were found positive for IBR virus in high percentiles and even breeding purpose male animals were found positive for IBR. These animals were also positive for other sexually transmitted diseases such as brucellosis. As can be seen from Table 1, gaushalas had higher seroprevalence of IBR because gaushalas have animals from different sources and these are kept in close contact. Due to close contact, the transmission of disease is easier and fast among all animals. Similar

reasons are for higher serotiter of Babugarh farm where animals are kept in close contact in sheds. Thus it can be concluded from the study that the IBR infection is prevalent in cattle population in both organised and unorganised herds.

REFERENCES

- Chinchkar, S.R., Deshmukh, V.V., Abdulaziz and Gujar, M.B. (2002). Seroprevalence of infectious bovine rhinotracheitis in Maharashtra state. *Indian Vet. J.* **79**: 68-69.
- Dhand, N. K., Singh, G., Sharma, D. R. and Sandhu, K. S. (2002). Seroprevalence of infectious bovine rhinotracheitis in Punjab. *Indian J. Anim. Sci.* **72**: 850-852.
- Jain, V., Parihar, A. K., Upadhyay, A. K. and Kumar, M. (2006). Seroprevalence of IBR among bovines of Garwal region. *Indian Vet. J.* **83**: 340-342.
- Jai, S., Rai, R. B., Kundu, A., Chatterjee, R. N., Senani, S. and Jeyakumar, S. (2005). Incidence and prevalence of livestock diseases of Andaman and Nicobar Islands. *Indian J. Anim. Sci.* **75**: 1041-1043.
- Lyaku, J. R. S., Nettleton, P. F., Msolla, P. M. and Scott, C. R. (1991). Prevalence of antibody to bovine herpesvirus-1 (BHV-1) in Tanzanian cattle. *Trop. Anim. Hlth. Prod.* **23**: 106-107.
- Pandita, N. and Srivastava, R. N. (1993). A study on sero-epizootiology of BHV-1 in Haryana. *Indian J. Virol.* **9**: 31.
- Pandita, N. and Srivastava, R. N. (1995). Dot-immunobinding assay for detection of bovine herpes virus-1 (BHV-1) antibodies. *Indian J. Virol.* **11**: 27-29.
- Rajesh, J. B., Tresamol, P.V. and Saseendranath, M. R. (2003). Seroprevalence of infectious bovine rhinotracheitis (IBR) among cattle with different reproductive disorders. *Indian J. Anim. Sci.* **73**: 1047-1048.
- Raghuvanshi, S. and Kumar, M. (2003). Sero-epidemiological investigation of infectious bovine rhinotracheitis in cattle and buffaloes using Avidin-Biotin ELISA. "Xth Annual Conference of IAAVR" held at Veterinary College, CSK HPKV, Palampur, April 14-15.
- Sarumathi, C., Reddy, T. V. and Sreedevi, B. (2002). A study on sero-epizootiology of infectious bovine rhinotracheitis in Andhra Pradesh. *Indian J. Comp. Microbiol. Immunol. Infec. Dis.* **23**: 153-155.
- Suresh, S., Manorma, D., Hinakaran, Appaji Rao, V.N. and Tresamol, P.V. (1992). Serological survey of infectious bovine rhinotracheitis/ infectious pustular vulvovaginitis (IBR/IPV) in buffaloes of Tamil Nadu. *Cherion* **21**: 68-70.
- Suresh, K. B., Sudharshana, K. J. and Rajasekhar, M. (1999). Seroprevalence of infectious bovine rhinotracheitis in India. *Indian Vet. J.* **76**: 5-9.