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Recurrent Mastitis in Small Dairy Herds with BVDV infection: An Emergency Threat

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Abstract

This present study correlates the bovine viral diarrhea seroprevalence with the clinical outcome. Among the 500 animals screened for BVD antibodies, 63 animals showed positive for mastitis. Out of 63 samples from mastitis cases 30 animals showed positive for BVD antibodies which account the percentage of 47.60 followed by repeat breeder (16.20%), chronic enteritis (9.40%) and respiratory distress (9.10%).This study showed that BVD one among the emerging cause for the Mastitis in dairy animals of India.

Keywords: Recurrent mastitis – cow- bovine viral diarrhea

Introduction

Bovine viral diarrhea virus (BVDV) capable of causing serious and complex clinical disease in cattle. Bovine mastitis is a highly prevalent disease in dairy cattle, and one of the most important diseases affecting the world's dairy industry; it places a heavy economic burden on milk producers all over the world [1,2]. The percentage of culture-negative samples of both clinical and subclinical mastitis cases in the Netherlands has recently been determined to be approximately 25% [3]. Reported an increased amount of mastitis cases in BVDV and BHV1 seropositive herds. A significant increase in the incidence rate of clinical mastitis in herds exposed to BVDV was observed when compared to non-BVDV exposed herds [4]. This study was designed to assess the direct and indirect effects of BVD infection on mastitis in dairy animals.

Materials and Methods

This study was undertaken between September 2014 and September 2016 and to assess the regional epidemiology of BVD infection in cattle. IDEXX BVDV Total Ab Test kit (HerdChek* BVDV Ab IDEXX, Lieberfeld- Bern, Switzerland) was used to assess the BVD total antibody from the clinical samples by indirect ELISA test.

Results and Discussion

Out of 62 dairy farms screened 17 small herds found to be positive for BVD antibodies. Among the four districts studied, nine out of 14 dairy farms from Coimbatore district were positive with percent positivity of 64.28 (Table 1). Out of 500 sera samples screened, 66 samples were positive for BVD antibodies by indirect ELISA with per cent positivity of 13.20. The titer was found with minimum of 0.166 to maximum of 1.36 with a mean value of 0.07 (Figure 1). Out of these 500 cases analyzed 63 cows showed clinical and subclinical mastitis episodes, out of which 30 of these cows were positive for BVD with per cent positivity of 47.60. (Table 2). The seroprevalence of BVD in dairy cattle was 47.60 a in cows suffering from mastitis. The observed higher level of mastitis could be due to the immune suppression effect of BVDV [5,6]. Immunosuppression is found to be the direct effects of BVDV on circulating T and B lymphocytes [7].

Table 1: District wise seroprevalence of BVD in dairy cattle by i- ELISA.

District	No. of Farm Tested	No. of Farm Positive	% Positive	No. of Samples Screened	No. of Samples Positive	% Positive	Chi Square	P Value
Coimbatore	14	9	64.28	125	40	32		
Erode	19	2	10.52	125	7	5.6		
Karur	14	1	7.14	125	3	2.4		
Tirupur	15	5	33.3	125	16	12.8		
Total	**62**	**17**	**27.14**	**500**	**66**	**13.2**	**46.9a**	**0**

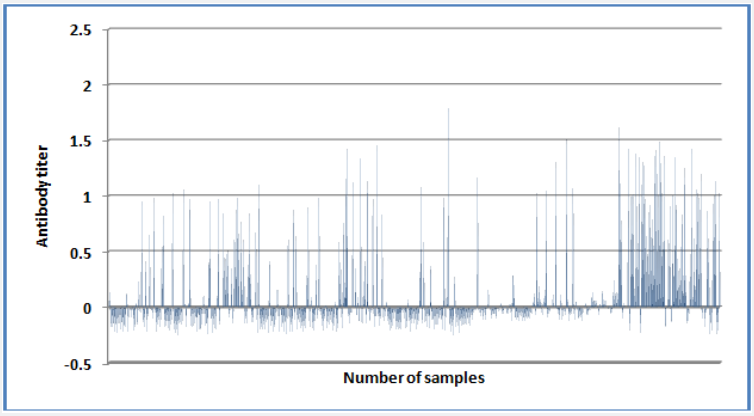

Figure 1: Indirect ELISA BVD antibody titer value in dairy cattle of north western zone of Tamil Nadu.

Table 2: Clinical history in BVD seropositive dairy cattle of Tamilnadu.

Clinical History	No. of Samples Screened	No. of Samples Positive	% Positive	Chi Square Value	P Value
Repeat breeder/Anestrum	99	16	16.2		
Chronic enteritis	32	3	9.4		
Respiratory distress	11	1	9.1		
Mastitis (clinical and sub clinical)	63	30	47.6		
Apparently healthy animals	295	16	5.4		
Total	**500**	**66**	**13.2**	**82.0[a]**	**0**

This study showed that BVD antibody titer with minimum of 0.166 to maximum of 1.36 which were witnessed in more number of animals with clinical mastitis at herd level. Niskanen et al. observed higher the BVD antibody titre resulted more mastitis cases among dairy animals [8] which coincides in this study Higher the percentage of animals exposed to BVD antibodies were found to have higher number of mastitis cases (47.60%) than non exposed dairy cattle [4]. This study documented the emergency threat posed by BVDV and their impact in the form of recurrent mastitis. It is also understood that treatment refractory as well recurrent mastitis cases need to be subjected to viral studies so as to plan and prevent economic losses to farmers [9-14].

Summary

This study showed that because of immunosuppressive effect of BVDV, dairy animals showed higher percentage of sub clinical and clinical mastitis.

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