Association of herd BHV-1 seroprevalence with respiratory disease in youngstock of Estonian dairy cattle

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Introduction

Bovine respiratory disease (BRD) is usually of multifactorial origin, involving infectious, environmental and management-related factors as well as those related to stress and the immunity of the animal. Bovine herpesvirus 1 (BHV-1) is considered to be an important component of the etiological complex causing BRD in cattle.

Aim of this study was to to investigate the associations of herd bovine herpesvirus 1 (BHV-1) status and respiratory disease (BRD) occurrence in dairy calves and pre-breeding heifers. In addition, associations between farm management related factors and the occurrence of BRD in that age group was evaluated.

Methods

Serum samples were collected from cows and youngstock from 103 dairy cattle herds and analyzed for antibodies against BHV-1, bovine respiratory syncytial virus (BRSV), bovine virus diarrhea virus (BVDV), and *Mycoplasma bovis* (*M. bovis*). Questionnaire was used to register herd management practices and disease occurrence.

Results

Table 1. Results of logistic regression analysis for risk factors for high occurrence of respiratory disease in calves until three months old (99 herds)

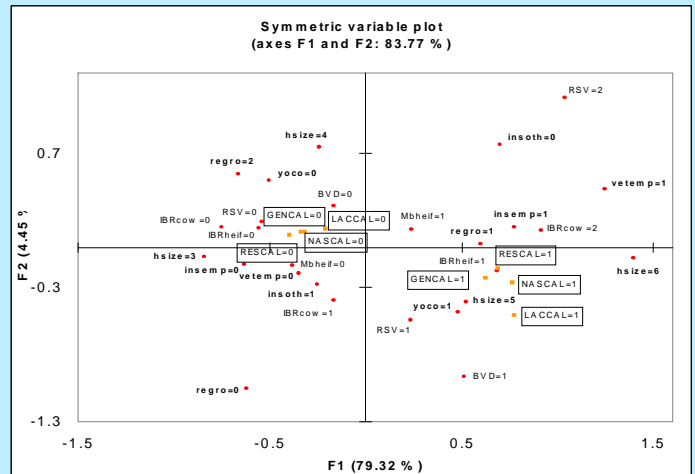| Risk factor	Herds (n)	OR	p	95% CI
BHV-1 prevalence in cows[a]				
0	38	1	-	-
1-49%	26	14.8	0.005	2.3; 95.5
>50%	35	19.2	0.002	3.0; 121.8
BVDV in heifers				
0	75	1	-	-
1	24	5.1	0.020	1.3; 20.1
Herd size[b]				
20-99 cows	40	1	-	-
100-199 cows	18	1.7	0.557	0.3; 9.3
200-399 cows	23	8.0	0.008	1.7; 37.3
>400 cows	18	6.4	0.029	1.2; 33.8

Figure 1. Graphical display of Multiple Correspondence Analysis, with respect to axis 1 and 2 for high occurrence of respiratory disease symptoms in calves until three months old (99 herds)

Table 2. Results of logistic regression analysis for risk factors for high occurrence of respiratory disease in heifers three to sixteen months old (99 herds)

Risk factor	Herds (n)	OR	p	95% CI
BVDV in heifers				
0	76	1		
1	23	4.3	0.027	1.2; 15.8
Herd size				
20-99	40	1		
100-199	19	4.9	0.113	0.7; 34.4
200-399	23	5.3	0.065	0.9; 31.6
>400	17	8.1	0.022	1.4; 49.1

Conclusions

- BHV-1 and BVDV were related to BRD in unweaned calves
- BVDV is associated with BRD in older youngstock
- Higher occurrence of respiratory disease is generally more likely in larger herds
- On-farm employees can participate in spreading of the disease
- Holding youngstock separately from cows until pregnancy and purchasing animals were factors related to a higher risk for BRD

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