BOVINE HERPESVIRUS 1 AS A RISK FACTOR FOR THE HEALTH OF ESTONIAN DAIRY CATTLE

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Bovine herpesvirus 1 (BHV1) is the causative agent of infectious bovine rhinotracheitis, abortion, pustular vulvovaginitis in cows and heifers and systemic infection in calves. The objective of this study was to clarify the significance of BHV1 as a risk factor for the health of dairy cattle in Estonia.

Serum samples were collected from cows and youngstock from 64 BHV1 infected and 39 uninfected herds and analysed for BHV1 antibodies. Ten serum samples from youngstock were analysed for BVDV antibodies. Herds were categorised into three groups based on their BHV1 within-herd prevalence (0%, 1-50% and >50%). Logistic regression analysis was used to estimate the impact of BHV1 to the occurrence of respiratory disease in three age groups (calves up to three months, three to 16 months old youngstock and pregnant heifers and cows) as well as for yearly incidence of abortions and insemination coefficient. A herd was considered to be infected with BVDV if at least one of the ten serum samples was positive with antibody testing. BVDV and herd size were controlled as potential confounders in the models.

The impact of BHV1 to the occurrence of respiratory disease present concurrently in over 10% of calves up to three months old was highest in herds with BHV1 prevalence of 1-50% (OR 5.27, 95%CI=1.30, 21.39, p=0.020) compared to BHV1 negative herds (n=95). BVDV present in a herd was positively associated with the respiratory disease occurrence in calves (OR 4.12, 95%CI=1.05, 16.12, p=0.042). BHV1 was insignificant variable in the model predicting respiratory disease in three to 16 months old youngstock as well as in pregnant heifers and cows. Risk of a herd having yearly incidence of abortions over 1.3% was highest when herd BHV1 prevalence was 1-50% (OR 5.17, 95%CI=1.68, 15.89, p=0.004) (n=89). Chance of a herd having insemination coefficient over 1.9 was also highest in farms with BHV1 prevalence of 1-50% (OR 3.92, 95%CI=1.26, 12.20, p=0.018) (n=80).

Colostral immunity may not be sufficient to protect young calves from respiratory disease caused by BHV1 and BVDV can be predisposing factor exacerbating the disease. BHV1 was not associated with respiratory disease among older youngstock and cows suggesting that the course of the BHV1 infection is subclinical in those age groups. BHV1 is related to poorer reproduction parameters among cows especially in herds with low to moderate herd immunity level.