ABSTRACT TITLE
Prevalence of viral and bacterial pathogens in nasopharyngeal and pharyngeal recess regions of Holstein calves with and without signs of clinical bovine respiratory disease

AUTHORS(S)
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ABSTRACT
Purpose: The objective of this research was to perform a case-control study of bovine respiratory disease (BRD) in young Holstein bull and heifer calves ranging in age from 35 to 55 days at a large calf ranch in central California to evaluate the association of viral and bacterial pathogens from the nasopharyngeal and pharyngeal recess regions.

Methods: A total of 1,004 calves were identified as BRD cases which had scores of 5 or greater based upon the University of Wisconsin calf respiratory scoring system which evaluated rectal temperature, cough, nasal and eye discharges, and ear position or head tilt. These calves were paired with a similar number of control calves that had minimal signs or no clinical evidence of BRD. Calves were sampled for BRD pathogens prior to antimicrobial treatment. Both mid-pharyngeal and deep-pharyngeal swabs were collected for viral PCR diagnostics that included bovine viral diarrhea virus (BVDV), bovine coronavirus (BCV), bovine respiratory syncytial virus (BRSV), and infectious bovine rhinotracheitis virus (IBR). Another deep pharyngeal swab was collected for aerobic microbiological and mycoplasma culturing.

Results: BRD cases had a significant association with serum total protein <5.2 g/dL at 2d of age compared to controls (OR = 1.42; 95% CI = 1.19, 1.69). Diagnostic results yielded significant associations of cases with these pathogens compared to controls: BCV (OR = 1.29; 95% CI = 0.94, 1.78); BRSV (OR = 2.89; 95% CI = 2.19, 3.82); Mycoplasma spp. (OR = 1.29; 95% CI = 1.08, 1.54); H. somni (OR = 4.40; 95% CI = 1.48, 13.12); Mannheimia spp. (OR = 2.49; 95% CI = 1.95, 3.19); P. multocida (OR = 1.95; 95% CI = 1.61, 2.37). All samples were negative for IBR and BVDV.

Conclusions: Cases of respiratory disease in young Holstein calves which were identified by a respiratory scoring system had significant associations with some but not all BRD viral and bacterial pathogens. Negative results for BVDV PCR on 2,030 samples indicated that maximum BVDV pathogen prevalence would be less than 0.14% among this population of calves in hutches on this calf ranch. Findings from this study will be used to evaluate genetic relationships of Holstein calves for resistance or susceptibility to BRD.