Aim

The objective of this research was to perform a case-control study of bovine respiratory disease (BRD) in young Holstein calves to evaluate the association of viral and bacterial pathogens from the nasopharyngeal and pharyngeal recess regions.

Methods

An ongoing study at a large calf ranch in central California which will analyze the geospatial association with BRD by conducting 800k single nucleotide polymorphism (SNP) assays has presently resulted in recruitment of more than 498 Holstein bull and heifer calves ranging in age from 35 to 55 days as cases of BRD. These calves are identified as cases due to having 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.

Results

Both mid-nasal 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. Calves were sampled for BRD pathogens prior to treatment. Blood samples were collected for genetic analyses. All calves received a modified-live two-way IBR and parainfluenza-3 intranasal vaccine at one day of age and a modified-live 5-way virus vaccine at one month.

Conclusions

Nasopharyngeal and pharyngeal recess swabs provided diagnostic prevalence information about important BRD pathogens. Mannheimia spp., Pasteurella multocida, and BVDV were all significantly associated with increased risk of being bovine coronavirus positive. No positive samples for IBR virus or BVDV were detected.

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