Persistent IBR Infections in the Bovine Lymphoid System: Implications for Vaccination and Control

Christopher C. L. Chase, *DVM, PhD*
Pu Wang
David J. Hurley
Departments of Veterinary Science
Animal Disease Research & Diagnostic Laboratory
South Dakota State University
Brookings, SD 57007

Respiratory tract infection with bovine herpesvirus 1 (BHV-1) results in infectious bovine rhinotracheitis (IBR), a significant clinical syndrome of cattle that plays a major role in bovine respiratory disease. BHV-1 infection like all herpesviruses, results in lifelong infection that can be reactivated. The dogma has been that the inactive latent virus resides in the nervous system primarily in the trigeminal ganglion of the head. Work in horses and pigs has shown recovery of virus from lymphoid tissue months after infection, indicating that these tissues are important for latency. The kinetics of BHV-1 infection 6-8 months post challenge on peripheral blood leukocytes was examined. Control animals and animals vaccinated with an inactivated vaccine were challenged with BHV-1. Peripheral blood cells were collected from these animals and analyzed for infection using flow cytometry and indirect immunofluorescent microscopy. At intervals 6 and 8 months following challenge, BHV-1 was present in T cells, macrophages and B cells of both control and vaccinated cattle. The levels of infection were lower for the vaccinated cattle than for the control cattle. These results indicate a long term latency of BHV-1 in lymphoid tissue that has potentially positive and negative results on the immune response. Research in our laboratory is currently aimed at looking at the effect of this latent BHV-1 infection on immune cytokines.

The Effect of 7-Way Clostridial Booster Vaccination at Reimplant on Subsequent Sudden Death Syndrome Mortality Rates at a Nebraska Feedlot

Brad De Groot, *DVM, MS*
GPVEC
State Spur 18D, Box 187
Clay Center, Nebraska

The effect of 7-way colostridial booster vaccination at reimplant on subsequent Sudden Death Syndrome (SDS) rates at a 35,000 head, Nebraska feedlot was investigated using all cattle reimplanted between January 1, 1993 and April 1, 1994. The definition for SDS used was consistent with that advanced by Williams in 1976.

Sudden Death Syndrome is not thought to result from communicable, infectious agents. Therefore, prospective sample size calculations were based on booster vaccinations allocated at the individual animal level with boostered cattle and non-boostered control cattle commingled in each pen. Alpha and beta error levels were set at 0.05 and 0.20 respectively and 40% SDS mortality rate difference between booster and control groups was determined to be the level of economic significance based on cost:benefit analysis. The projected sample size requirements of approximately 31,000 head per treatment group were met in January 1994. The feedlot management decided to continue allocating cattle to the trial through March 1994 so trial cattle would be present through an additional spring, which was historically the peak SDS incidence season.

By April 1, 1994, the final trial population was 40,482 booster vaccinates and 40,504 controls. The post-reimplant SDS mortality rate was 0.0023 for the boostered group and 0.0024 for the control group. Clostridial booster vaccination did not lower SDS losses in this Nebraska feedlot.

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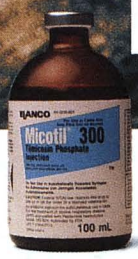

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