

Case 3 the animals were inadequately vaccinated. In the small sample size from Case 2, only Vaccine C was detected in the abortions. In this herd, the vaccination interval in some of the animals may have been greater than a year, leading to an increased abortion rate. Case 3 is interesting as no MLV was administered to the cows so the virus spread from the MLV vaccinated calves to the cows. This case reinforces the need

to make sure the cow herd is adequately vaccinated if calves are vaccinated with MLV vaccine while still with the cows. Case 4 is evidence again of the higher susceptibility of heifers to MLV induced abortion even when “properly vaccinated”. In summary, MLV BHV-1 vaccines must be used judiciously following label directions. In spite of the following the label, reproductive issues can still occur.

Impact of passive immunity induced by maternal vaccination on subsequent immunization and disease-sparing in early-weaned beef calves challenged with highly virulent BVDV

P.H. Walz, DVM, PhD, DACVIM¹; A. R. Richardson, BS¹; K. P. Riddell, DVM, MS¹; M. D. Givens, DVM, PhD, DACT, DACVM¹; M. F. Chamorro, DVM, PhD, DACVIM²; AV. Santen, PhD³

¹Department of Pathobiology, Auburn University, Auburn, AL 36849

²Department of Clinical Sciences, Auburn University, Auburn, AL 36849

³Department of Agronomy and Soil Sciences, Auburn University, Auburn, AL 36849

Introduction

Vaccination programs have been developed to limit disease associated with bovine viral diarrhea virus (BVDV) infection. The ultimate goal of BVDV vaccination is to induce immunity that prevents viral replication after infection; however, passively acquired BVDV-specific neutralizing antibodies can impact immunity and vaccine responses in the young calf. The purpose of this study was to examine the impact of passively-derived antibody on vaccine response and mitigation of disease in early weaned beef calves whose passive immune status was documented, and when vaccination and challenge were separated by only 5 days.

Materials and Methods

Sixty-three crossbred beef calves were utilized in this study. All calves were born to heifers raised and bred in biosecure herds, and whose vaccination histories or absence of vaccination were known. Calves were stratified by serotiter to BVDV 2 from serum samples obtained on calves 30 days prior to study. Calves were then randomly assigned to unvaccinated (n=31) or vaccinated (n=32; Inforce3/Bovi-Shield BVD) groups. Calves were weaned (day -7) shipped (day

-6), and vaccinated/unvaccinated (day -5) prior to challenge (day 0) with BVDV 2 strain 1373. Virus isolation from whole blood, serum, and nasal swabs, clinical pathology, clinical illness scores, and virus neutralization assays were performed on calves following challenge.

Results

Vaccinated calves exhibited significantly lower rectal temperature measurements, significantly higher white blood cell and differential cell counts, and significantly better average daily gains than calves that remained unvaccinated. In contrast to 100% of unvaccinated calves becoming viremic, BVDV was not isolated from any clinical sample at any time point from 47% (15/32 calves) of the calves administered modified-live viral vaccine. Viral shedding (nasal swab isolation of BVDV) was significantly reduced in vaccinated calves (1/32) compared to unvaccinated calves (21/31).

Significance

The level of passive immunity induced by maternal vaccination had minimal impact on vaccine response and subsequent protection from clinical disease following challenge.