PERFORMANCE OF CALVES BORN TO BEEF COWS SEROPOSITIVE BUT SUBCLINICAL FOR BOVINE LEUKOSIS VIRUS

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Summary

Calves from a commercial beef herd were evaluated for weight gain differences based upon the bovine leukosis virus (BLV) serological status of their dams. One hundred forty-two multiparous cows from a commercial beef herd were tested for BLV by agar gel immunodiffusion. Eighty-nine cows (62.6%) were found to be seropositive for BLV. Weights were collected from all calves at weaning, from heifers on the date when selection of replacement heifers was made, and from steers on the day of harvest after being fed to finish weight in a feedlot. Offspring from seronegative cows tended to have heavier weaning weights (+17 lb) and heifer selection weights (+31 lb) than those from seropositive cows.

Introduction

Bovine leukosis (BLV) is a viral disease of cattle that usually produces a subclinical leukemia-like syndrome, or, less often, neoplastic nodular masses visible under the skin and/or scattered throughout the body. The virus is transmitted primarily by the transfer of blood from infected animals to non-infected animals. Common management practices that lead to animal-to-animal transmission include using blood-contaminated equipment such as vaccination needles, ear-taggers, dehorners, castration knives, etc., on multiple animals in succession. The BLV is transmitted to a much lesser extent by blood-sucking insects, and it is occasionally transmitted directly from the cow to the calf during pregnancy or at birth. Infection with BLV often remains unobserved until late in the course of the disease, when it causes loss of body condition, decreased milk production, and premature culling in clinically affected cows. If affected cows are not culled in a timely fashion, the disease will lead to death loss. Calves nursing clinically affected cows have reduced performance. The purpose of our study was to determine the influence of subclinical bovine leukosis in cows on calf weaning weights, replacement-heifer selection weights, and finished steer weights.

Experimental Procedures

A commercial spring-calving beef herd grazing native pasture and known to contain individuals naturally infected with BLV was selected for the study. Before calving, blood samples were collected from all cows, forwarded to the Kansas State Veterinary Diagnostic Laboratory, and screened for the presence of antibodies to the BLV by using the agar gel immunodiffusion test. Cows were calved on pasture and observed until weaning. Cows that developed clinical signs of bovine leukosis or were culled for any other reason, as well as their calves, were removed from the study. Calves that did not reach the end points of the study, along with their dams, were also removed. One hundred forty-two cows and their calves met final criteria for inclusion in

[1]Veterinary Clinical Sciences.

the study, based upon cows remaining non-clinical for BLV until after their calves were weaned in the fall, and either their heifer calves being weighed as candidates for replacement heifers or their steer calves being harvested after completion of a feedlot finishing phase. Eighty-nine (62.6%) of the 142 cows were seropositive for BLV, whereas 53 (37.3%) were seronegative. Cows and calves were maintained on native grass pasture throughout the pre-weaning portion of the study. Precautions were taken during springtime, pre-weaning, weaning, pre-breeding, and feedlot vaccinations and processing to reduce the likelihood that blood-borne transmission of BLV would occur in the cows or calves. Heifers were maintained on native grass pasture and managed collectively after weaning. Steers were moved to a feedlot and managed collectively after weaning.

Results and Discussion

It was suspected that subclinical bovine leukosis might interfere with the milking ability of the cows sufficiently to reduce the weaning weights of their offspring. Weaning weights of all calves, heifer replacement weights, and steer finished weights are shown in Table 1. Although the weaning weights were not statistically affected by the dam's serological status (P=0.11), the differences suggested that subclinical bovine leukosis tended to have a negative effect on weaning weights of calves born to seropositive cows. This tendency was also observed for heifers selected as potential replacements (P=0.08). Weights of the steers did not tend to be statistically different at the time they completed the feedlot phase, although the numerical difference between the groups was actually greater for finished weights (19 lb) than for weaning weights (17 lb). The lack of statistical difference at slaughter could be due to greater variation among the steers at slaughter preventing an accurate assessment of treatment differences.

Our findings reinforce the need for beef producers to know the BLV status of their herds and take appropriate actions to reduce the impact of the disease. If only a few animals are positive, aggressive culling is recommended. If, as in this case, a high percentage of the cows are positive, management steps should be taken to reduce the transmission of the disease from infected to non-infected animals. Such steps include changing needles on every syringe between every animal and liberal use of disinfectants on all equipment that contacts blood, including ear-taggers, dehorners, castration equipment, tattoo equipment, calving chains, etc. Attention to these details should help reduce secondary performance losses in calves from herds in which BLV is present.

Table 1. Weights of offspring from BLV seropositive and seronegative cows

Item	Calves from Seronegative Cows	Calves from Seropositive Cows	P-value
Weaning weight, lb	600	583	0.11
Heifer replacement weight, lb	837	806	0.08
Steer finished weight, lb	1105	1086	0.53