Effects of Seropositivity for Bovine Leukemia Virus, *Mycobacterium avium* subspecies *paratuberculosis,* and *Neospora caninum* on Risk of Culling in Dairy Cattle

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Introduction

Infection with bovine leukemia virus (BLV), *Mycobacterium avium* subspecies *paratuberculosis* (MAP) and *Neospora caninum* (NC) can lead to clinical diseases (diarrhea or abortion, respectively) with subsequent culling. However, effect associated with subclinical infection by these agents is still unclear. The purpose of this research was to determine the effect of seropositivity for exposure to BLV, MAP and NC on risk of culling in subsequent years after testing in three Maritime dairy cattle.

Materials and Methods

In the summer of 1998, 90 dairy herds on monthly milk recording were randomly selected, 30 from each province. Within each herd, a serum sample was obtained from approximately 30 randomly selected lactating animals. Samples were tested for antibodies against BLV, MAP and NC using a commercially available ELISA. For each tested animal, production data were gathered electronically from a central milk-recording database for the period of May 1998 to February 2002. For each microbe, risk of culling during the subsequent four years among seronegative and seropositive cow groups was calculated. Comparative risk of being culled (between groups) was evaluated by using Cox-proportional hazard models, while controlling for lactation number and seropositivity to the other two microorganisms, and adjusting for clustering in herds.

Results and Conclusions

Overall, 20.8, 2.6 and 20.3% of cattle were test-positive for exposure to BLV, MAP and NC, respectively. There was moderate statistically significant higher risk of culling for cows seropositive for BLV and MAP compared to seronegative cows. Risk of culling during the four years after testing was 1.17 (S.E. 0.08) and 1.34 (S.E. 0.23) times greater in BLV and MAP seropositive cows, as compared to BLV and MAP seronegative cows. Subset analyses based on reasons for culling (eg., low milk production, mastitis and reproductive inefficiency) in BLV and MAP seropositive cows will be conducted and presented at the time of the conference. Additional data from other provinces (eg., Saskatchewan and Ontario) will be obtained soon, increasing the sample size and power to detect significant differences in culling between seropositive and seronegative cows, particularly for MAP analyses which had a limited number of seropositive cattle.