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The Relationship between Locomotion Scores and Lameness Lesions in Dairy Cattle

Gerard Cramer, *DVM*[1]; **Kerry Lissemore,** *DVM, DVSc*[1]; **Dave Kelton,** *DVM, PhD*[1]; **Chuck Guard,** *DVM, PhD*[2]; **Ken Leslie,** *DVM, MSc*[1]; **Janyk Laferriere**[1]

[1] *Department of Population Medicine, University of Guelph, Guelph, Ontario, Canada*

[2] *Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, NY*

Introduction

To preserve and improve the perception that the dairy industry has among consumers, there is a need to be able to identify and act upon animal welfare concerns. Lameness is the dairy industry's most visible animal welfare concern. Unfortunately, dairy producers often underestimate the level of lameness on their farm. Bovine practitioners need to take a leadership role in assisting the dairy industry in monitoring and reducing lameness. To meet this challenge, accurate methods to diagnose lameness early is needed. A variety of locomotion scoring systems are used to assess lameness. However, few of these systems have correlated the score assigned to a cow with the lesion present in the claw. The objective of this project was to evaluate the association between locomotion scoring and lesions found at the time of foot trimming.

Materials and Methods

Five professional hoof trimmers were asked to recruit from among their clients to participate in this locomotion scoring study. In these herds, locomotion scoring was carried out 1-2 weeks prior to the scheduled hoof-trimming visit. During their scheduled visit the hoof trimmers were asked to record lesions on a standardized recording form for all cows they trimmed. The standardized recording form was based on the lesions descriptions and codes proposed by the American Association of Bovine Practitioners Lameness Committee. Locomotion scoring in free stall herds was done using a four-point scale (normal, mild, moderate, severe). In tie stall herds in addition to a leg score the presence of back arch was recorded. The leg score evaluates the angle between the spinal column and the interdigital space. This angle is categorized into mild (17-24 degrees) and severe (greater than 24 degrees). Locomotion and lesion data were combined with Dairy Herd Improvement (DHI) data where available.

Results

A total of 2077 cows were locomotion scored in 18 tie stall and 14 free stall herds. Average back arch prevalence in tie stall herds was 23%. Mean prevalence of cows with a severe leg score was 13%. For locomotion scored cows, 5.5% of the cows were in the severely lame category. Overall, 28% of the locomotion scored cows were either moderately or severely lame. Lesion, locomotion and DHI data was available for 807 animals. Of these cows, 53% had at least one lesion at the time of hoof trimming. For cows scored in tie stalls, those with a severe leg score tended to be twice as likely to have a lesion than cows with a normal or mild leg score. When only infectious lesions were considered, cows with a severe leg score were 2.5 times as likely to have an infectious lesion compared to cows with a normal or mild leg score. For locomotion scored cows, those with a moderate locomotion score were 1.7 times as likely to have any lesion than cows with a normal or mild score. Similarly, cows with a severe locomotion score were 4.7 times as likely to have any lesion. When only severe non-infectious lesions were considered, cows with either a moderate or severe score were 2.7 and 8.7 times as likely to have a severe non-infectious lesion than normal or

mildly lame cows. Interestingly, locomotion scores did not accurately predict the presence of infectious lesions.

Significance

These results demonstrate that locomotion scoring can be used to predict the type of lesion present in the claw of a dairy cow. However, care should be taken when locomotion scoring is used to assess the presence or absence of a lameness problem since it did not accurately predict the presence of infectious lesions. For cows unable to be locomotion scored, the use of the leg score system appears be useful to predict the presence of infectious lesions.

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Herd Level Risk Factors for Non-infectious and Infectious causes of Lameness for Ontario Dairy Herds

Gerard Cramer, *DVM*[1]; **Kerry Lissemore,** *DVM, DVSc*[1]; **Dave Kelton,** *DVM, PhD*[1]; **Chuck Guard,** *DVM, PhD*[2]; **Ken Leslie,** *DVM, MSc*[1]
[1] *Department of Population Medicine, University of Guelph, Guelph, Ontario, Canada*
[2] *Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, NY*

Introduction

Lameness is one of the most important issues facing the dairy industry, both in terms of production costs and public perception of dairy cow welfare. To assist bovine practitioners in making recommendations that reduce or prevent lameness, there is a need for knowledge about the prevalence of lameness and a more complete understanding of the factors that contribute to lameness in different North American management systems. The objective of this project was to determine the effect of selected risk factors on the prevalence of infectious and non-infectious claw lesions on dairy farms in Ontario.

Materials and Methods

Five professional hoof trimmers were recruited, trained and asked to record lesions on a standardized recording form for all cows that they trimmed. The standardized recording form was based on the lesions descriptions and codes proposed by the American Association of Bovine Practitioners Lameness Committee. In addition to recording lesions, the selected hoof trimmers were asked to complete a risk factor questionnaire for each herd. Both questionnaire and lesion data were entered into a database (MySQL) via the internet. Data management and analysis were done using a commercially available statistical program (STATA). To facilitate analysis, lesions were categorized into infectious and non-infectious categories based on etiology. Since risk factors vary depending on housing and lesion category, the impact of specific risk factors was evaluated using separate linear regression models for each housing and lesion category.

Results

Complete data were collected on 24 free stall and 89 tie stall herds. Average herd size for tie stalls and free stalls was 45 (CI: 40-47) and 76 (CI: 55-97) cows, respectively. Herd level mean prevalence of infectious causes and non-infectious lameness lesions was 22.9 and 17.9%, respectively. For both infectious and non-infectious lesions, cows housed in free stalls had a significantly higher prevalence compared to herds using tie stalls. For tie stall herds, the use of wood shavings for bedding and routinely spraying cows feet were associated with an increased prevalence of infectious lesions. However, the use of a total mixed ration was associated with decreased infectious lesion prevalence. For non-infectious lameness lesions in tie stall herds, trimming heifers prior to calving decreased prevalence by 4.6%. In this subset there was a tendency for a higher prevalence in larger herds. In free stall herds, using less than one inch (2.5 cm) of bedding was associated with a 13.3% increase in non-infectious lesion prevalence.

Significance

From these results, it is clear that the dairy industry continues to struggle with both infectious and non-infectious lameness lesions. The results also identified certain risk factors that were associated with prevalence levels. These risk factors should be managed accordingly to reduce the overall prevalence of lameness lesions.