

Impact of early detection and treatment of moderate lameness on disease progression and cow performance

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Introduction

Lameness on dairies is a worldwide problem that negatively impacts animal welfare, herd production level, and social perception of livestock farming. Prompt treatment of moderate lameness cases is expected to result in better clinical cure and reduction of lameness prevalence; however, very limited research has evaluated this. The objective of this study was to study the impact of moderate lameness treatment on disease progression and milk yield.

Materials and Methods

Two free-stall dairies located in Tulare County (California, US) were enrolled in the study. Dairy A (DA) milked 2,374 cows twice a day, whereas Dairy B (DB) milked 2,800 thrice a day. Moderate lame cows (locomotion score=3; Sprecher et al, 1997) were identified as they exited the milking parlor. Moderate lame (LS 3) cows were enrolled in the study unless they were >180 d carrying calf, >350 d in milk, >5 lactations, or yielding <22 lb (10 kg)/d at trial onset. Cows were randomly assigned within dairy to control group (C, no intervention) or treatment group (T, the same hoof trimmer evaluated and treated cows under researcher observation). The final data set comprised 64 C and 73 T cows (DA) and 84 C and 75 T cows (DB). Cows in the control group were blinded to the dairy management. Type and severity of lesions was recorded on intervention day for T cows and from all cows that, up to 6 wk post-treatment, were weekly selected to be evaluated and treated by the hoof trimmers based on standard herd protocol. Daily milk yield data was collected from -1 wk to 6 wk relative to intervention (Afimilk Ltd, Israel). All milk yield data outside 2.33 SD were considered outliers and removed. Milk yield data were analyzed for DA and DB

using a multivariable linear regression model with repeated measurements including the effects treatment, time, and treatment by time interaction. Data were covariately adjusted by yield at -1 wk relative to intervention.

Results

The majority of cases had no lesions (45.2% DA, 37.3% DB) or thin soles (4.1% DA; 13.3% DB). Overall, the most prevalent lesions were sole hemorrhages (23.3% DA, 33.3% DB), vertical horn fissure (9.6% DA, 4.0% DB), white line disease (6.9% DA, 1.3% DB), and digital dermatitis (2.7% DA, 4.0% DB). Most of these lesions (87.4%) were classified as mild. After treatment, 13 (C) and 10 (T) cows were selected by farm employees for lameness treatment. Milk yield decreased over time for both DA and DB ($P<0.001$). On DA, milk yield was similar ($P=0.7$) for C (90.4 lb or 41.1 kg/d) and T (90.7 lb or 41.3 kg/d), whereas on DB it was higher ($P=0.04$) for C (95.7 lb or 43.5 kg/d) than T (92.8 lb or 42.2 kg/d). No significant treatment by time interaction was observed in DA ($P=0.90$) or DB ($P=0.23$).

Significance

In our study, most LS 3 cows lacked painful hoof lesions. Thus, most cows were simply evaluated by the hoof trimmer and few received additional treatment. Hoof trimmer intervention had a detrimental impact on milk yield on DB. Reduction of sole thickness during hoof trimmer evaluation might have increased susceptibility to hoof lesions or hoof pain, especially when cows were walking to the parlor thrice daily. The milk yield decrease over the study period was likely associated with a raise in temperatures as summer approached, and by greater DIM of enrolled animals.