

The association of dystocia and metritis with daily activity patterns of Holstein dairy cows

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Introduction

Calving related losses due to dystocia and metritis affect the bottom line of dairy operations, and their underlying causes should be investigated to develop preventive procedures with consideration given to animal welfare and farm profitability. Monitoring cow activity patterns around the clock may allow dairy producers and their veterinarians to improve the identification of cows at risk of developing dystocia or metritis. The objectives of this study were to assess the effect of dystocia on cow activity behavior 4 days before calving and to assess the effect of metritis on cow activity behavior 3 days before and after diagnosis.

Materials and Methods

A total of 147 primiparous and multiparous Holstein cows housed in free-stall barns from 3 dairy herds were enrolled in the study. All cows were housed in similar facilities, which included group housing in a close-up pen 15 days before the expected calving date and a contiguous, individual maternity pen for parturition. Electronic data loggers (IceQube™, IceRobotics, Edinburgh, Scotland) were placed on the hind leg of periparturient dairy cows approximately 7 ± 3 days before the expected calving date and removed at approximately 14 ± 3 days-in-milk (DIM). Calving ease (CE; scale 1 to 4), parity, calving date and time, and stillbirth (born dead or died within 24 hours) were recorded. Metritis (MET) was defined as a fetid, red-brown watery vaginal discharge with systemic signs of illness within 14 DIM. The number of steps, standing time in minutes, number

of lying bouts (LB), and mean duration of LB in minutes were recorded. Data were analyzed using MIXED (activity patterns) and GLIMMIX (stillbirths) procedures of SAS. Activity patterns for assisted or unassisted cows and MET or nonMET cows were adjusted for the effect of herd, parity, and CE.

Results

Cows with assisted births spent more time standing (18.6%; $P < 0.05$), had a similar number of LB ($P > 0.05$), but LB of longer duration (42.6%; $P < 0.05$) 24 hours before birth, compared with those for cows with unassisted birth. Cows with MET spent more time standing (4% to 28%), had fewer steps (12% to 35%) and LB (23%), and LB of longer duration (22% to 28%) 1 to 3 days before and after MET was diagnosed, compared with those for cows without MET cows ($P < 0.05$).

Significance

These findings provided evidence that cows that had dystocia had distinct activity behavior 1 day before calving. Cows that developed MET also had distinct behavioral activity patterns 1-3 days before diagnosis. Recognizing early warning signs of dystocia or MET may help identify those cows most at-risk and allow for earlier intervention. Monitoring cow activity along with proactive preventive management practices before and after calving may improve the overall survival and welfare of the dam and calf.