LAMENESS DUE TO CLAW DISORDERS IN HOLSTEIN DAIRY CATTLE IS ASSOCIATED WITH ELEVATED SERUM HAPTOGLOBIN

Billy Smith, Lisa Sherman, Johannes Kauffold

Large Animal Clinical Studies, University of Pennsylvania, Kennett Square, PA, USA

Introduction: Elevated serum HB concentration has been associated with several diseases including pneumonia, MASTITIS, uterine infection, and stress, but not with LAMENESS.

Objective: To measure serum HB in Holstein dairy cattle diagnosed with LAMENESS.

Materials and methods: Sixty Holstein dairy cows (parity 1-8) in overall general good health were identified as having claw-related LAMENESS that was divided into four categories; pododermatitis septica (PS; n = 41), pododermatitis circumscripta (PC; n = 8), interdigital necrobacillosis (IN; n = 7), papillomatous digital dermatitis (PDD; n = 4). Another 10 cows also in good general health were randomly chosen as controls. Lame animals were treated immediately after diagnosis using standard of care treatment protocols; no anti-inflammatory drugs were given. None of the control cows received any treatments. Blood samples were collected by coccygeal venipuncture at initial diagnosis but before treatment (day 1), and on days 3 and 5 thereafter. HB concentration was measured in serum by means of radial immunodiffusion assay. Data were analyzed using Friedman, Wilcoxon signed ranks, and Pearson's chi-square tests.

Results and discussion: All of the control cows had normal HB values (< 1.0 mg/dL). On day 1, thirty-six cows with claw-related LAMENESS had elevated serum HB (>10 mg/dL), while twenty-four were found with normal serum HB (< 1.0 mg/dL). Percentage of cattle with elevated HB on day 1 was PS = 65.9%, PC = 37.5%, IN = 71.4%, and PDD = 25.0%. In PS and IN animals, median HB concentrations decreased after treatment between days 1 and 5 (P < 0.05), with a concomitant decrease in the number of animals with HB < 1.0 mg/dL (P < 0.05), but treatment did not lead to any reduction of HB in the proportion of cows with elevated HB in the PC group.

Conclusion: As lame cows were initially found to have elevated serum HB regardless of the claw disorder, these results suggest that any of the disorders PS, PC, IN, PDD can lead to a systemic acute phase response. It is unknown as to why the same disorder elicited a response in only some of the cows and should be further investigated.

Keywords: Dairy cattle, LAMENESS, Haptoglobin