three hours later was significantly lower ($P < 0.05$) in the ketoprofen-treated group. All behavioural responses in this experiment were infrequent, and there were no behavioural differences noted between treatment groups.

Analysis of the results from experiment B indicates a 50% reduction in the frequency of ear flicks in ketoprofen-treated calves ($P < 0.05$) during the seven hours following dehorning.

Results from experiment C suggest a tendency for a reduction in the frequency of head shakes in the ketoprofen group ($P=0.09$).

In general behavioural responses in the older calves dehorned with a larger dehorning device were considerably more frequent than that observed in younger calves.

Significance

Our work to date suggests that practitioners should encourage dairymen to dehorn calves at a young age (two days to two weeks) to minimize the behavioural response to dehorning. Additional treatment with ketoprofen at the time of dehorning may be beneficial in alleviating pain response following dehorning in dairy calves.

Metabolic Profiling And Health Risk In Transition Cows

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Introduction

Blood chemistry analyses are frequently used by veterinarians for disease diagnosis. Use of blood chemistries in the form of metabolic profiles to determine nutritional status has been advocated, but acceptance has been limited as a result of high cost and interpretation difficulties. Different criteria are needed using blood metabolite concentrations to determine disease potential compared to disease diagnosis. Blood metabolite measures are compared to laboratory-defined reference ranges, however, these reference ranges often are based on mid-to-late lactation cow populations and may not be appropriate for evaluating transition cows. Objectives of this study were to determine effects of time relative to calving and health status on blood metabolite concentrations and determine if any diagnostic relationships are present between prepartum blood metabolite concentrations and postpartum health status.

Materials and Methods

Metabolic profiles were performed on plasma samples collected from 113 cows housed at 15 commercial dairy farms over three time periods relative to calving. These periods were defined as: early dry (ED), >30 days precalving; close-up Dry (CU), three to 21 days precalving and fresh (FR), three to 30 days postcalving. Metabolic profile analyses included urea nitrogen (BUN), creatinine (Cr), glucose (Glu), total protein (TP), albumin (Alb), total bilirubin (TB), alkaline phosphatase (ALP), creatine kinase (Ck), gamma-glutamyltransferase (GGT), aspartate aminotransferase (AST), sorbitol dehydrogenase (SDH), sodium (Na), potassium (K), chloride (Cl), calcium (Ca), phosphorus (P), magnesium (Mg), total cholesterol (Chol), triglycerides (TG), beta-hydroxybutyrate (BHB) and non-esterified fatty acids (NEFA). Disease diagnosis and treatment events were recorded. Blood metabolites were evaluated by ANOVA for repeated measures with period, health and their interaction as main effects and herd as a covariate. Relative risk of postpartum disease was determined using contingency tables of selected metabolite concentration categories and health status.

Results

Of all cows, 53 % had one or more disease events post-calving. Percent healthy calvings varied greatly between herds. Herd was significant in all metabolite models, except NEFA and Ck. Time period influenced ($P<0.05$) all metabolite concentrations, except Ca, P and K. Health status influenced NEFA ($P<0.002$), BHB ($P<0.005$), TG ($P<0.03$), GGT ($P<0.02$) and AST ($P<0.04$) independent of time period. An interaction between time period and health status was found for Alb ($P<0.03$), BUN ($P<0.001$), Glu ($P<0.001$), Chol ($P<0.02$), TG ($P<0.02$), AST ($P<0.0002$), BHB ($P<0.005$) and NEFA

(P<0.001). Sick cows had lower Alb, BUN, Glu and Chol and higher AST, BHB and NEFA compared to healthy cows in the FR period. Fresh cow Alb concentration was stratified into three groups: < 3.0 g/dl, 3.0 to 3.5 g/dl and >3.5 g/dl and associated with health status. Percent of FR cows experiencing a health event within each group was 67, 61 and 32%, respectively (P<0.02). Cows with CU Alb concentrations < 3.25 g/dl were 1.46 (P<0.04; 1.04-2.04 95% CI) times more likely to experience a postpartum disease event. Within FR cows, Chol concentration increased (P<0.01) with increasing Alb concentration. Cows with FR Alb concentration < 3.30 g/dl were 1.79 (P<0.003; 1.19-2.70 95% CI) times more likely to have a disease event. If NEFA values were >0.4 mEq/l in either CU or FR samples, cows were 1.57 (P<0.03) and 1.47 (P<0.04) times more likely to have a disease event, respectively. Disease risk was greater if NEFA concentration was >0.6 mEq/l at CU (1.69, P<0.02) and FR (1.85, P<0.0007) periods. No metabolites measured in the ED period were associated with disease risk.

Significance

Based on these findings, reference ranges for diagnostic interpretation of blood metabolite concentrations should be adjusted to time periods relative to calving. Interactions between time period and health status suggest prepartum blood metabolite concentrations may provide some indication to postpartum disease risk and can be useful as a herd monitoring tool. Preliminary data suggest Alb and NEFA concentrations in CU and FR periods can be used to predict potential disease risk.

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The Use of Decision Tree Analysis to Improve LDA Decision Making

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Introduction

In food animal practice, medical decisions are usually made on the basis of economic impact to the dairy, rather than on perceived individual animal value or emotional attachment. A decision routinely made on dairies is what to do with cows that develop left displaced abomasums (LDA). Given the variety of management options available, veterinarians have the potential to make different recommendations depending upon the cow's historical value, parity, current stage of lactation, presence of concurrent disease, level of milk price and relative replacement cost. Decision trees are systematic quantitative tools that may be used to improve the ability to select the best course of action in situations, such as LDA, where the clinical decision is complex and outcomes are uncertain. The objective of this project was to demonstrate the use of a decision tree model as a tool to help select between surgery, roll and toggle or marketing for beef as the most economically appropriate management plan, given an early lactation cow with an LDA.

Materials and Methods

The LDA decision tree was designed using Microsoft Excel and Precision Tree, an Excel add-in tool that is available from Palisade Software. Assumptions used in the model included: a veterinarian performs the procedure and probabilities for recovery, death and culling were taken from the literature as well as from communication with herdsmen and veterinarians from the local area; costs for surgical intervention, therapy, and follow-up, as well as prices for replacement heifers, market cows and milk were based on current market prices in California; and that marketed cows are immediately replaced with an early lactation primiparous cow. Present value for a cow was based on her time-adjusted future predicted income over feed cost using parity-based culling risks, herd-specific reproductive efficiency, previous and/or future predicted individual cow milk production data, current feed cost estimates and predicted milk prices. Therefore, the model is examining the predicted value of the animal that might potentially occupy that cow-slot on the dairy by looking at the value of her