the previous studies. Dystocia and twinning increased occurrence of the disease ($P \leq 0.05$). However, sex of the calf was not affected. Days open and conception rate remained unaffected by the method of handling (146 vs. 112 days and 36.6 vs. 50 percent for manual removal vs. Conservative approach, respectively). However, number of services per conception was significantly different (2.75 vs. 2) ($P \leq 0.05$). In this study, *Actinomyces pyogenes* and *Bacteriodes melaninogenicus* were isolated more frequently in RP animals, and this was significantly different among groups in first and second sampling ($P \leq 0.05$). No difference could be found for other bacteria. From the cytological viewpoint, the mean neutrophils and lymphocytes were quite different among the three groups (69, 64.8 and 43.6 for the neutrophils and 42, 53 and 57 for lymphocytes, respectively). The difference was signficant in the first, but not the second, sampling.

Conclusion

Retained placenta increased occurrences of uterine infections and negatively affected reproductive performance. Removing the placenta manually depressed the uterine defense mechanism, and this was improved by application of the conservative method.

Reference

1. Gregory S. Lewis symposium: Health problems of the postpartum cow, Uterine Health and Disorders. *J Dairy Sci,* 80: 984-994, 1997.

Evaluation of Two Treatment Protocols against *Staphylococcus aureus* at Drying-off

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Introduction

A lot is known about control strategies to treat and prevent *Staphylococcus aureus* mastitis in dairy cattle. However, *S. aureus* continues to be one of the major causes of mastitis in dairy herds worldwide. The efficacy of current lactating cow antimicrobial therapy is clearly limited. Although intra-mammary dry cow therapy improves cure rate, the high proportion of treatment failures prevents this procedure from forming the basis for an effective control program. It has been suggested that extended lactational therapy prior to drying-off might improve cure rate. The goal of this study is to compare the efficacy of two treatment protocols, using either the combination of novobiocin and penicillin as a dry cow therapy (Novodry plus®), or the same treatment preceded by 3 complete treatments with Pirlimycin (Pirsue®), on bacteriological cure and reduction of somatic cell count (SCC) in cows infected with *S. aureus*.

Material and Methods

This study used 107 Holstein cows from 23 herds enrolled in a herd health program at the Faculté de médecine vétérinaire of the Université de Montréal. The unit of interest was the cow, all milk samples were composite. The animals were identified as *S. aureus* positive if they showed a positive culture for *S. aureus* from a milk sample taken during the lactation prior to treatment. The cows were randomly allocated to one of the two treatment protocols at drying-off. The first protocol (N) consisted of one intramammary injection of Novodry in each quarter at drying-off (n=40), the second protocol (3P+N) consisted in 3 consecutive treatments (2 tubes 24 hours apart in each quarter) of Pirsue® at intervals of 36h and followed by one intramammary injection of Novodry® before drying-off (n=42). Duplicate composite milk samples were taken prior to treatment at drying-off and 3 composite milk samples were taken after calving at 2 weeks intervals starting 3 days after calving. The milk samples were analysed according to NMC guidelines (NMC, 1990). Somatic cell counts were obtained from the milk samples of the monthly dairy herd improvement system program (PATLQ: Programme d'Amélioration des troupeaux Laitiers du Québec). For a bacteriological cure, the 3 milk samples after calving needed to be negative for *S. aureus*. The difference between the average linear score (L2S) of the first 3 tests after calving and the last 3 tests prior to drying-off for each cow was compared by treatment groups. Treatment

group differences were assessed by using chi-square analysis for bacteriological cure and ANOVA to evaluate linear score differences before and after treatment.

Results and Discussion

For the bacteriological analysis, only 83 cows were used because 24 animals were negative for *S. aureus* at the drying-off sampling (22.4%). The negative results at drying-off could be related to spontaneous cure, lactation therapy or false negative results. The percentage of bacteriological cure was significantly higher for group 3P+N (68%) than for group N (32%) ($p<0.05$). There was no difference in the cure rate across lactation groups (1, 2 and >3).

The higher cure percentage of group 3P+N can be explained by the higher level of antibiotic in the mammary tissues, the efficacy of pirlimycin and the combination of different products.

The average L2S for the 3 milk samples before treatment was 4.45 for group N and 4.58 for group 3P+N ; average L2S for the 3 milk samples after calving was 3.37 for the group N and 3.49 for the group 3P+N. We did not find any significant difference between the 2 treatments for the difference in L2S (after-before treatment); mean differences were –1.0588 and –1.1396 for N and 3P+N, respectively ($p=0.86$). Treatment 3P+N had positive impact on bacteriological cure but did not provide any improvement on L2S when compared to N.

Impact of Treatment with Monensin Controlled-release Capsule on Blood Biochemical Constituents

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Materials and Methods

In the context of a large, post-approval randomized clinical trial on Rumensin CRC®, blood samples were collected to determine the impact of treatment on different blood constituents of lactating dairy cows. This study was performed on 730 cows from 38 Quebec herds. Cows were randomly assigned to receive a Rumensin CRC capsule (n=354) or a placebo capsule (n=376) between two and four weeks before the expected calving date. Two blood samples were taken for each cow: once between two and four weeks postpartum and again between six and eight weeks postpartum. Blood analyses were performed on serum for the following biochemical constituents: glucose, urea, total protein, albumin, GGT, AST, potassium, inorganic phosphorus, calcium, Na, Cl, total CO2, Mg, cholesterol and ß-hydroxybutyrate (BHB).

Herd means for serum BHB were calculated from the first blood samples taken from the placebo cows. Those means were ranked, and three groups of risk for ketosis were created based on quartiles. For the low-risk-for-ketosis (LRK) herds, herd BHB mean was in the first quartile; for the medium-risk-for-ketosis (MRK) herds, between the first and third quartile; and for the high-risk-for-ketosis (HRK) herds, in the fourth quartile. A linear mixed-effect model (proc mixed in SAS) was applied to assess the effect of treatment on each biochemical constituent. Herd was entered in all models as a random variable and the following variables were included in the models to control for their fixed effects: treatment, biochemistry number, herd risk for ketosis, cow's level of production, herd's level of production, type of feeding, group of lactation and body condition. Interactions of each fixed variable with treatment were also verified. Tests for BHB were performed on log transformation.

Results

Serum glucose tended to be increased with treatment ($p=0.13$). Interaction between herd risk for ketosis and treatment was significant ($p=0.04$). Effect of treatment was more important on cows in HRK herds. Serum urea was also increased by Rumensin CRC ($P=0.001$). Interaction between treatment and type of feeding was significant ($p=0.02$). The rise in serum urea with treatment was of greater amplitude in cows fed concentrates distributed by robot than for cows fed a