Conclusion

In this study, cows with clinical mastitis that cultured *E. coli* or "no growth" did not benefit from treatment with intramammary antibiotics, and milk was deemed unsaleable for longer periods due to milk withdrawal requirements. Currently, cows with clinical mastitis are identified by culture and monitored for fever. They do not receive antibiotic treatment, and are returned to the milking herd when milk is observed normal. Only cows that culture streptococcal and staphylococcal intramammary infections are treated with antibiotics. Change in treatment protocol has increased mastitis monitoring, reduced the lost days of production and decreased the amount of antibiotics used without jeopardizing the animal's health and well-being.

Persistent Coliform Mastitis

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Introduction

The debate over treating clinical mastitis with an antibiotic has hinged around the isolation of environmental pathogens. Although intramammary antibiotics may be successful in eliminating gram-positive organisms, beta-lactam antibiotics have little efficacy on gram-negative organisms. Research also reports[1] that many of the gram-negative coliforms are self-eliminating, and are generally cleared by the time clinical mastitis is detected when antibiotics are administered. However, others have reported[2] that coliforms can persist without treatment and can contribute to increased somatic cell count in a herd. This study looked at the persistence of gram-negative coliforms in quarters that have been identified by culture at the signs of clinical mastitis.

Materials and Methods

In two large dairy herds of 2800 cows and 3500 cows, clinical mastitis was identified and routinely cultured for treatment decisions based on the culture results. In the case of severe mastitis and a sick animal, supportive therapy that included fluids and anti-inflammatory drugs was administered immediately upon detection. However, in most cases reported in this study, antibiotics were reserved for treatment of gram-positive pathogens identified at 24 hours. Most coliform mastitis cases (*Escherichia coli* and *Klebsiella* sp) were left "untreated" (no antibiotic therapy) and re-cultured at 5 to 10 days. In as many enrolled cows as possible, milk samples were collected and re-cultured at 21 to 35 days. *Klebsiella* sp and *E. coli* were confirmed on MacConkey agar and the number of colony forming units/ml (CFU) were recorded. The disposition of each cow was recorded as: 1) returned to the milking herd, 2) died, 3) sold, or 4) quarter was removed from production.

Results and Discussion

Coliforms were cultured from 165 cows on the two farms (87 cows and 78 cows), which accounted for approximately 25% of the clinical mastitis cases. Over half of the clinical mastitis cases were negative to culture (55%), and most of remaining cases (20%) were gram-positive pathogens. Of the 165 coliform cases, 149 were recultured and 77% were identified as *E. coli* and 23% were *Klebsiella* sp. One herd had a significantly higher number of *Klebsiella* infections, but the majority of clinical cases were due to *E. coli*, with 68% and 87%, respectively. *Klebsiella* sp were more likely to be re-isolated in 71% of the *Klebsiella* mastitis cases, compared to re-isolation of *E. coli* in 39% of the *E. coli* mastitis cases. If growth was heavy on agar (>1000 cfu/ml), coliforms were re-isolated in 68% of the cases; 82% for *Klebsiella* sp. and 62% for *E. coli*. If growth on the initial culture was less than 1000 cfu/ml, isolation dropped to 35% for *E. coli*, while *Klebsiella* sp remained more persistent and was isolated from 65% of the cases.

Thirty-three percent of the cows (54/165) did not return to normal production as a result of lost quarters, death or were sold. Cows with *Klebsiella* infections were more likely to be sold or lose a quarter, while more cows with *E. coli* died of severe mastitis.

Conclusion

It is believed[1] that gram-negative coliforms that produce clinical mastitis routinely clear the infection without the use of antibiotic therapy. This study showed

that in clinical cases of coliform infections present on the first culture when clinical mastitis was detected, nearly half were still present at 5 to 7 days later. *Klebsiella* infections were more persistent than *E. coli*. The heavier the growth on the first culture isolation, the more likely the infection was to persist (74%). Although recent studies[2] suggest the need for systemic antibiotics in severe cases, intramammary therapy may also be indicated.

References

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Effects of Dystocia on Dam Health and Productivity

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Introduction

The effects of dystocia on dam health and productivity are rarely monitored on dairy farms. It is highly likely that the effects of dystocia on health and production are substantial. The objectives of this year-long longitudinal study were to measure proportion of dams experiencing dystocia on three Front Range Colorado dairies and evaluate associations with dam productivity, morbidity and mortality.

Materials and Methods

A total of 6,528 calvings were recorded from October 2001 to October 2002 on three well-managed Holstein dairies. Each dam was assigned a dystocia score based on calving ease. Dystocia scores ranged from 1 to 3 (1=no assistance, 2=mild traction, 3=severe traction or surgery). Dams were categorized as primiparous (2350 head) or multiparous (4178 head). Morbidity, mortality and production parameters were monitored for each dam for the entire lactation following the calving event. A logistic regression model was used to calculate odds ratios, using dystocia score 1, dairy number 3 and multiparous as the referent categories. The model accounted for the covariate effects of dairy and lactation. Odds ratios were calculated for treatment of uterine disease (including retained fetal membranes, metritis and pyometra), respiratory disease, mastitis, being sold or dying within two weeks of calving, and during the entire lactation. Milk production (MP) to 30 days in milk, MP to 90 days in milk, mature equivalent 305-day MP and reproductive parameters were recorded. A generalized linear model was used to determine significant differences in milk production associated with dystocia score while controlling for dairy and parity. Data collection will continue until all cows have completed the current lactation or leave the herd for any reason.

Results and Conclusions

The percent of animals requiring assistance was significantly different between primiparous and multiparous animals ($P<0.0001$). Overall, 62.7% of all animals calved without assistance. Fifty three percent of primiparous heifers required calving assistance while 29% of multiparous cows required assistance. The proportion of dystocia scores 1 and 2 were significantly different among the three dairies. Dams with dystocia score 3 were more likely to experience uterine disease (odds ratio 2.3), respiratory disease (OR 1.5), to be sold during the lactation (OR 1.6) or die within 2 weeks of calving (OR 4.0) compared to dams with dystocia score 1. Dams experiencing dystocia were not at increased odds of experiencing mastitis. Cumulative milk production to 30 days in milk was significantly decreased for dystocia score 3 compared to scores 1 and 2 ($P<0.0001$). Cumulative milk production to 90 days was not significantly different among dystocia scores.

Dystocia rates in the studied dairies were high, with a greater occurrence in primiparous compared to multiparous dams. Dystocia was strongly associated with increased morbidity and mortality in dams. Although milk production to 30 days in milk was significantly lower for dams experiencing dystocia, these effects did not continue into later lactation, as cumulative 90-day milk production was not significantly different among dystocia scores. Dystocia is a significant and often underappreciated problem on many dairy operations.