

Research Summaries 2

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Evaluation of the Use of Cephapirin Sodium Intramammary Therapy in the Close-up Dry Period to Reduce Subclinical Mastitis in Adult Dairy Cattle

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Introduction

Subclinical mastitis and milk quality are significant economic issues among dairies. It has been estimated that clinical mastitis can cost \$110 per case, and the inclusion of losses in milk production and discarded milk among subclinically affected cattle increase this estimate to \$200. The prevalence of intramammary infections (IMIs) peaks in the early and late dry periods, so these times are important to mastitis control programs. This study was designed to examine the potential benefit of intramammary therapy (IMT) administered in the late dry period on the incidence of IMIs in the first 180 days of lactation.

Materials and Methods

A total of 225 adult cattle with one or more previous lactations in a 300-milking-cow herd were enrolled in a clinical trial at dry-off. Cattle were assigned to treatment or control group by ear tag number—even-numbered ear tags were allocated to the treatment group and odd-numbered ear tags were entered into the control group. At dry-off, all cattle were treated with intramammary cloxacillin benzathine (DryClox). Cattle in the treatment group then received IMT in all quarters with cephapirin sodium 14-21 days prior to freshening. Within the first 10 days of lactation, rectal temperatures were recorded, milk quality in all study quarters was assessed using a California Mastitis Test (CMT) and a composite milk sample was collected and submitted for culture. Dairy Herd Improvement records were used to record production and somatic cell count data for the first six test days of lactation for all study cattle.

Results

A total of 184 cattle completed the clinical trial. Cattle receiving IMT were less likely to have a positive CMT ($p=0.03$) in the first 10 days of lactation than untreated cattle. However, there was no significant difference in either the proportion of cattle with positive milk cultures or the proportion exhibiting abnormal milk (clinical mastitis) during the first 180 days of lactation among treatment and control groups. Cattle were stratified into two groups: one with normal SCC ($<200,000$) and one with abnormal SCC on the last test day of the previous lactation. Cattle with normal SCC on the previous lactation were less likely ($p=0.009$) to exhibit abnormal milk during the study lactation, but IMT in this group had no effect on the probability of abnormal milk. Likewise, there was no significant difference in somatic cell counts, linear somatic cell scores, or milk production parameters between treated and control groups in stratified analysis. Among cattle with normal SCC on the last test-day of the previous lactation, test-day milk weights were 4-7 lb (1.8-3.2 kg) greater among treated cattle compared to control cattle. In addition there was a tendency ($p=0.06$) for treated cattle to have a summit milk yield six lb (2.7 kg) higher than untreated cattle. Among younger cattle (i.e. 2nd-3rd lactation), treated cattle had an average summit milk yield seven lb (3.2 kg) greater than untreated cattle ($p<0.0001$).

Significance

The results of this study suggest that IMT with cephapirin sodium of adult cattle during the close-up dry period may reduce the prevalence of positive CMTs

during the first 10 days of lactation and may result in higher milk production during the first 180 days in milk. However, IMT with cephalixin sodium during the close-

up dry period does not seem to aid in the clearance of prior infections or reduce the prevalence of clinical mastitis among adult cattle.

Association between Local (Udder) Clinical Signs and Important Outcomes of Clinical Mastitis Episodes in Dairy Cattle

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Introduction

Clinical mastitis (CM) is the most common infectious disease of dairy cattle and is responsible for significant economic losses. There are many local clinical signs associated with inflammatory changes of the mammary gland during bacterial infection. Treatment and prognosis of CM is often decided based on one or more of these clinical signs, however, there have been no studies evaluating the association of important outcomes associated with CM and the presence of these signs in cows with mild systemic disease.

Materials and Methods

Cows with CM exhibiting mild systemic disease signs (N=240) from a 1500-cow dairy were enrolled in the study. Cows were examined for the presence or absence of firmness and swelling of the affected mammary gland, clots in milk and character of the secretion (thin, thick or serum). Milk culture results and intramammary treatment (IMT) were recorded. Outcomes assessed were: need for re-treatment (RTX); recurrent CM episode in the same quarter 15-60 days later (RECUR); dried quarter, death or culling; and sick pen days (SPD). Data was evaluated using PROC GENMOD and GLM in SAS.

Results

RTX occurred in 27% (63/231) and RECUR in 25% (51/206) of CM episodes. Quarter-drying and cow-culling occurred in ~5 of CM episodes, and no deaths occurred. RTX was the only outcome associated with local clinical signs evaluated. Re-treatment was 3.64 (1.32-10.2) times more likely in a cow with serum vs. thin secretion. Cows with swelling were 2.82 (1.06-8.14) times more likely to be re-treated, while those receiving pirlymicin IMT were 6.66 (1.99-25.7) times more likely to be re-treated than those who initially received no IMT treatment. Secretion was the only clinical sign affecting SPD. Cows with serum had significantly greater SPD (11.6) than those with thick (6.9) or thin (7.4) secretions (P<0.001).

Significance

Results suggest serum secretion and swelling of the affected mammary gland was associated with increased re-treatment rate, and serum secretion was associated with greater SPD in cows with systemically mild CM. This type of data will be useful in determining which local clinical signs associated with CM are the most important to evaluate.