Effect of Teat Dipping on Mastitis Infection in Dairy Cows at First Calving

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Story in Brief

Mastitis infection in first lactation cows is a problem in dairy herds. This trial was conducted to determine whether daily teat dipping of heifers prior to calving would reduce the incidence of infection at calving.

One-half of a group of heifers were teat dipped daily with an iodine preparation starting at least two weeks before anticipated calving date. Within four days after calving, and at midlactation, quarter milk samples were obtained for microbiological examination. In the group teat-dipped before calving, 16 quarters in 11 cows were infected with mastitis organisms, whereas 12 quarters in eight cows were infected in the control group. The types of organisms found were the same as those commonly involved in mastitis in this herd. Many of the infections present at calving were not evident by midlactation.

Teat dipping of heifers prior to calving did not affect the incidence of mastitis infection at calving.

Introduction

Significant progress has been made in recent years toward reducing the incidence of mastitis in dairy herds. By following recommended control procedures, a high percentage of new infections can be prevented. For example, the number of new infections occurring during lactation can be reduced by at least 50 percent by dipping of teats with an effective bactericidal preparation after each milking. Antibiotic infusion at drying off has proven to be an effective means of preventing approximately 75 percent of the new infections that would otherwise be expected to occur during the dry period.

Yet, in herds where the overall infection rate is relatively low, udders of a disporportionate number of first lactation cows contain mastitis organisms. In the OSU herd, these infections apparently existed at the time of calving, rather than being new infections occurring early in lactation. It appears likely that such infections represent a greater problem in dairy herds than generally recognized, because they are not as apt to result in clinical mastitis in young cows.

This experiment was conducted to determine whether daily teat dipping with an iodine preparation prior to calving would reduce the incidence of mastitis infection in first lactation cows at calving.

Materials and Methods

Sixty-four dairy heifers were paired on the basis of anticipated calving date, and by breed where feasible. There were 25 pairs with heifers of the same breed and seven pairs with different breeds. The experimental plan was for one member of each pair to serve as a control with no treatment, and the other to be teat dipped daily for at least two weeks prior to calving. Samples were not obtained from a few animals. Data were available on 28 teat-dipped heifers and 29 control heifers. The days of teat dipping prior to calving ranged from seven to 127, with an average of 36 days. An extended period for a few animals occurred because they were pasture bred and an accurate breeding date was not available. Only six heifers were teat-dipped less than two weeks prior to calving.

Duplicate quarter milk samples were taken within four days after calving and again at mid-lactation. These were plated on blood agar for determination of the number and type of bacteria present, using procedures outlined by the National Mastitis Council. Swabs on the exterior of the teats of several animals also were made to determine the types of organisms present prior to calving.

Results and Discussion

One-third of the heifers were found to be infected on the basis of microbiological examination of quarter milk samples within four days after calving (Table 1). Of the 19 having mastitis organisms in one or more quarters, only one was observed as a clinical case of mastitis by the time of sampling. In comparison, 25 percent of the infections were evident as clinical mastitis in previous work with older cows.

Teat dipping prior to calving was not effective in reducing the number of infections at first calving. The infections may have existed in the heifers before teat dipping was started, so that this practice had no effect on infection status. It is highly unlikely that the infections were acquired within four days after calving for a number of reasons. One factor supporting this opinion is that the overall level of infection in the herd was much lower than that found in the first lactation cows at this stage, i.e., approximately five percent vs. 12.3 percent of quarters infected. Also, recently calved cows are milked first in the OSU herd

Table 1. Infection status of cows at calving

Group	No. of cows		No. of quarters	
	Negative	Infected	Negative	Infected
Dipped	17	11	96	16
Control	21	8	104	12
	38	19	200	28

Table 2. Types of organisms in infected quarters at calving

Organism	No. of cows	No. of quarters
Staph. aureus	8	11
Strep. dysgalactiae	9	16
Strep. uberis	2	2
Other	3	3

Table 3. Comparison of infection status of cows at calving and at mid-lactation

Status at:		Group		Total cows
Calving	Mid-lactation	Dipped	Controls	
Neg.	Neg.	15	17	32
Neg.	Inf.	0	3	3
Inf.	Inf.	1	3	4
Inf.	Neg.	9	5	14
		25	28	53

reducing the probability that the infections were transmitted from older cows via the milking equipment.

The types of organisms found in the first lactation cows at calving were the same as those commonly found to cause mastitis in this herd (Table 2). Moreover, the same types of bacteria were found on the exterior of the teats of the heifers before calving.

A comparison of the infection status of cows at calving and at mid-lactation revealed that many of the infections were transitory in nature (Table 3). Of 18 cows infected at calving, five later became clinical cases, but with different quarters infected in two of them. Ten apparently recovered spontaneously, whereas four were still positive at mid-lacation. Also, three cows negative at calving were found to have mastitis-causing organisms in the udder at mid-lactation. Of 53 cows still in the herd at mid-lactation, seven were infected. Eleven of 212 quarters, or 5.2 percent, were affected. This was essentially the same level of infection as existed in the total herd of approximately 200 milking cows. Mastitis infection in first lactation cows remains a problem in dairy herds. Hopefully, some solution will result from additional research now underway.