

Prevalence of Intramammary Infections in Beef Heifers at Parturition

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The prevalence of intramammary infections (IMI) in dairy heifers at parturition has been determined at several sites both within the USA and worldwide. To our knowledge, a study regarding the prevalence of IMI in beef heifers at parturition has not been performed. Because of a large number of elective caesareans in beef heifers, we were presented with the opportunity to determine the prevalence of beef heifer IMI at parturition.

Ninety-eight mixed breed heifers (predominantly Angus-Hereford cross) originating from herds in Iowa were studied. The heifers were transported to Virginia when they were approximately 12 months of age and were maintained under pasture conditions until time for elective cesarean. Milk samples were collected aseptically from all 4 quarters after an elective cesarean. Coliforms were identified by API biochemical test strips. *Streptococci* were identified as environmental streptococci or *Streptococcus agalactiae* based on results of esculin and CAMP tests; and *Staphylococci* were identified as coagulase-negative staphylococci, *Staphylococcus aureus*, or coagulase-positive *Staphylococcus hyicus*. The coagulase-positive *Staphylococci* were further differentiated by hemolytic patterns and growth or non-growth on modified Baird-Parker agar (Roberson *et al.*, 1992). No *Staphylococcus intermedius* was identified. Three of the milk samples were contaminated; therefore culture results were available for 389 quarters. Results are presented in Table 1.

Of the 21 heifers with *S. aureus* IMI, 48% (10) were infected in only 1 quarter, 29% (6) 2 quarters, 14% (3) 3 quarters, and 10% (2) all 4 quarters. The coliforms included *Escherichia coli* (4), *Pseudomonas* (1), and *Aeromonas* (1).

As reported in the literature, the prevalence of IMI in beef cattle ranges from 5%-27.5% for quarters and 10.7%-54.4% for cows (Haggard *et al.*, 1983; Simpson *et al.*, 1995; Newman *et al.*, 1991; Watts *et al.*, 1986; and Hoyer *et al.*, 1991). The reported prevalence of *S. aureus*

Table 1. Prevalence of Intramammary Infections in Beef Heifers at Parturition.

Pathogen	98 Heifers	389 quarters
Environmental Streptococci	13% (13)	4.1% (16)
<i>Streptococcus agalactiae</i>	1% (1)	0.26% (1)
Coagulase-negative Staphylococci	43% (42)	17% (66)
<i>Staphylococcus aureus</i>	21% (21)	10% (39)
<i>Staphylococcus hyicus</i> (coagulase-positive)	4% (4)	1.5% (6)
Coliform	5% (5)	1.8% (7)
Negative	38% (37)	68% (263)
Total Intramammary Infections	62% (61)	32% (126)

IMI ranged from 7.1%-13% of cows and 2.7%-3.2% of quarters. Watts (1986) reported that *S. aureus*-infected cows weaned calves weighing significantly less than uninfected cows, which is similar to the findings of Newman (1991).

The finding of contagious mastitis pathogens, such as *S. aureus* and *S. agalactiae* were not surprising, but the prevalence of *S. aureus* IMI in beef heifers was higher than expected. However, some of the *S. aureus* IMI identified in the current study may actually represent teat canal infections. Approximately 50% of dairy

heifer *S. aureus* IMI were thought to be teat canal infections due to the inability to culture *S. aureus* from the same heifers at later dates in the first lactation (Roberson *et al.*, 1994). Udder lesions suggestive of fly damage had not been noted on these heifers. The mode of transmission of *S. aureus* to beef heifers is unknown but may be similar to the mode of transmission of *S. aureus* in dairy heifers. Heifers were sold after elective cesareans, thus follow-up data were not available.

References

Haggard, D.L., R.J. Farnsworth, and J.A. Springer. 1983. Subclinical mastitis of beef cows. *J Am Vet Med Assoc* 182:604. Hoyer, M.J.,

R. Codd, A.S. Bishi, A. Pawandiwa, and E.A. Usenik. 1991. The prevalence of subclinical mastitis in beef herds in Zimbabwe. *Zimbabwe Vet J* 22:1. Newman, M.A., L.L. Wilson, E.H. Cash, R.J. Eberhart, and T.R. Drake. 1991. Mastitis in beef cows and its effects on calf weight gain. *J Anim Sci* 69:4259. Roberson, J.R., L.K. Fox, D.D. Hancock, and T.E. Besser. 1992. Evaluation of methods for differentiation of coagulase-positive Staphylococci. *J Clin Microbiol* 30:3217. Roberson, J.R., L.K. Fox, D.D. Hancock, C.C. Gay, and T.E. Besser. 1994. Coagulase-positive Staphylococcus intramammary infections in primiparous dairy cows. *J Dairy Sci* 77:958. Simpson, R.B., D.P. Wesen, K.L. Anderson, J.D. Armstrong, and R.W. Harvey. 1995. Subclinical mastitis and milk production in primiparous Simmental cows. *J Anim Sci* 73:1552. Watts, J.L., J.W. Pankey, W.M. Oliver, S.C. Nickerson, and A.W. Lazarus. 1986. Prevalence and effects of intramammary infection in beef cows. *J Anim Sci* 62:16.