Case Report: Mastitis Outbreak in Beef Bulls on a Feeding Test

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Introduction

Mastitis is a common disease of high producing dairy cows, but is rare in beef breeds. There are anecdotal reports of mastitis in bulls or steers, but there is only one published report of mastitis in a bull. This case study describes an outbreak of mastitis in a group of confined beef bulls in Georgia in 2007, and describes the observed effects of mastitis on measures of growth.

Materials and Methods

In July 2007, 101 purebred bulls between seven- and ten-months old, representing 10 different beef breeds, entered a bull test station. The program's purpose was to evaluate bulls' abilities to gain weight under a uniform management approach. Bulls were housed as groups of six to 14 in 10 pastures of approximately two acres each. Each pen had its own grain self-feeder, hay feeder and a fixed shade structure. Adjacent pens shared water troughs. The first case was diagnosed on July 19 by an employee of the bull test station. Physical examination revealed a swollen mammary gland with expressible fluid and pus. The next case was diagnosed on August 23, and four more cases were seen on September 25. At this time, the herd veterinarian was consulted and took samples for bacteriological culture and recommended treating the affected teats with a dry-cow intramammary antibiotic. The two samples submitted for culture yielded a positive culture of *Arcanobacterium pyogenes* and *Acinetobacter lwoffii*. At this point, the herd veterinarian consulted with members of the University of Georgia (UGA) Animal Science Department and the UGA College of Veterinary Medicine for further work-up. Physical examinations were performed on 58 animals on October 18, 2007, and on 98 animals on November 12, 2007. Secretions from teats found to fit the case definition for mastitis were aseptically collected for bacteriologic culture. Individual animal body weights were recorded every 28 days during the test period, and average daily gain (ADG) and weight per day of age (WDA) were calculated and compared between affected and unaffected groups using a t-test. Breeding soundness examinations were not part of the bull test routine and were not performed.

Results

The cumulative incidence of mastitis was 21.4% (21 out of 98 bulls examined). Cultures from the teat secretions yielded the following bacteria: *Arcanobacterium pyogenes* (25 samples), coagulase negative *Staphylococcus* sp (3 samples), *Staphylococcus aureus* (2 samples), coliform bacteria (4 samples), *Streptococcus* sp and *Staphylococcus* sp (1 sample), *Streptococcus* sp (2 samples) and no growth (8 samples). Culture of teat scabs grew coagulase negative *Staphylococcus* sp. Mean average daily gain (ADG) of affected bulls was not statistically different from unaffected bulls (4.23 lb/day vs. 4.11 lb/day, $P = 0.34$). Mean weight per day of age (WDA) was numerically greater, but not statistically different, for affected bulls than for unaffected bulls (3.50 lb/day vs. 3.39 lb/day, $P = 0.054$).

Significance

Mastitis in bulls has been described in the literature, but only in sporadic individual cases. Although no detectable impact on weight gain was seen in these bulls, it is conceivable that a localized inflammatory process, such as mastitis, could have an impact on the ability of bulls to gain weight. Because of the proximity of the glands to the testicle, there may also be effects on developing spermatozoa and thus fertility. The lesions did not appear painful to affected bulls, but pain in this area may decrease the willingness of bulls to mount females, and thus reduce their value to a herd. The cause of this epidemic of mastitis is still undetermined, but it is hypothesized by the authors that the mastitis was an opportunistic invasion of mammary glands that were hypersecretory due to high levels of phytoestrogens in the feed.