

Chronic Mastitic Quarters that Don't Cure Need to be Permanently Dried Off

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Introduction

Dairy farmers must often deal with high-producing cows that are chronically infected in an udder quarter that does not respond to antibiotic therapy. Such quarters contribute to elevated somatic cell counts (SCC) and bacteria counts in herd milk, and serve as reservoirs for infecting other cows. However, these quarters can be dried off and converted to a nonfunctional state without harming adjacent quarters. Production of high quality milk with low SCC yields a premium from many milk plants and dairy cooperatives. Thus, dairy farmers should make every effort to reduce the SCC of herd milk to the lowest possible level.

Procedures

In a university study, 15 lactating Jersey cows chronically infected with *Nocardia* species, *Pseudomonas aeruginosa*, *Escherichia coli*, or *Serratia* species were studied. All infections had been refractory to repeated attempts of antibiotic therapy and had elevated SCC (millions/ml). The purpose of the investigation was to determine if infected quarters could be dried off and rid of their existing infections. Infected quarters were infused after milking with 60 ml of Nolvasan® (2% solution of chlorhexidine diacetate) under the supervision of the herd veterinarian, milked out and dumped at the next milking, and reinfused at 24 hours after the first infusion. All milking of the treated quarters was discontinued after the second infusion. Bacteriological status and SCC were determined before infusion and at regular intervals until each cow entered her nonlactating period. Residue testing was performed on quarters from which secretion could be obtained using the Delvotest®. Quarter SCC were performed using a Fossomatic 90 electronic cell counter, and milk yield was obtained from Dairy Herd Improvement records. Rectal temperatures were taken one time at 24 hours after the first infusion. Six of the 15 cows were later sacrificed and mammary tissue collected for histologic analysis.

Results and Discussion

All quarters infused with Nolvasan® were permanently rendered nonfunctional 14 to 63 days after the first infusion. Somatic cell counts in treated quarters decreased from $8,622 \times 10^3/\text{ml}$ before infusion to a mean of $4,914 \times 10^3/\text{ml}$ over the 2 months after infusion (Figure 1), and decreased to approximately $1,000 \times 10^3/\text{ml}$ by day 63 post infusion (Figure 2). In uninfused, uninfected adjacent quarters, SCC increased from $247 \times 10^3/\text{ml}$ before infusion to an average of $317 \times 10^3/\text{ml}$ over the 2 months after infusion (Figure 3).

Infused quarters were sensitive upon palpation by 24 hours post treatment, and swelling was apparent in 2 quarters of the 15 cows, but symptoms disappeared after the first week. Secretions from infused quarters exhibited large clots and a watery consistency. Fluid volume decreased with time, and no secretions were obtained at 63 day post infusion. Body temperatures taken 24 hours after the first infusion were normal (101.6°F).

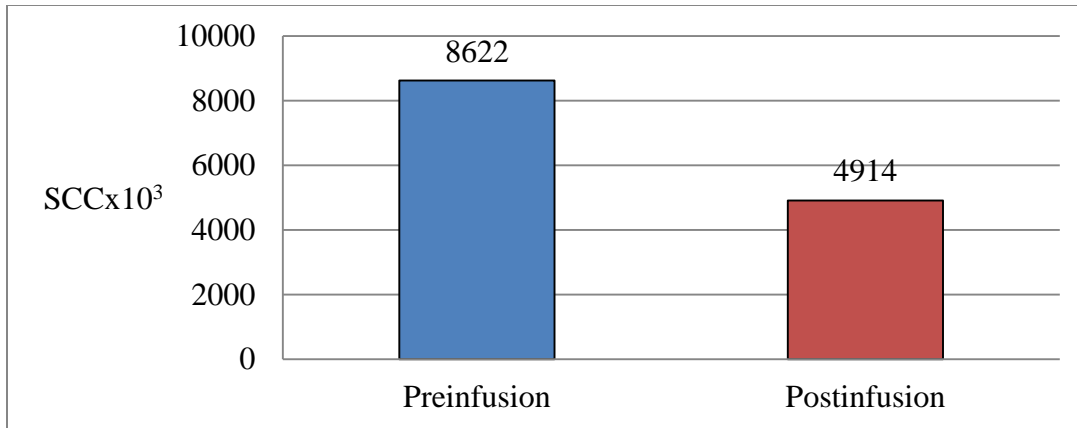


Figure 1. Mean somatic cell counts in treated quarters before and after Nolvasan[®] Infusion.

Milk yield decreased from 36 lb/day pretreatment to a mean of 24 lb/day over the remainder of lactation (Figure 4), which is not excessive given the loss of one quarter and the normal decrease that is associated with advancing lactation. Antimicrobial residues resulting from Nolvasan[®] infusion were detected for up to 35 days in a few quarters, but most quarters from which secretions could be obtained were residue-free by 21 days. Residues were not detected in uninfused quarters of the same udder.

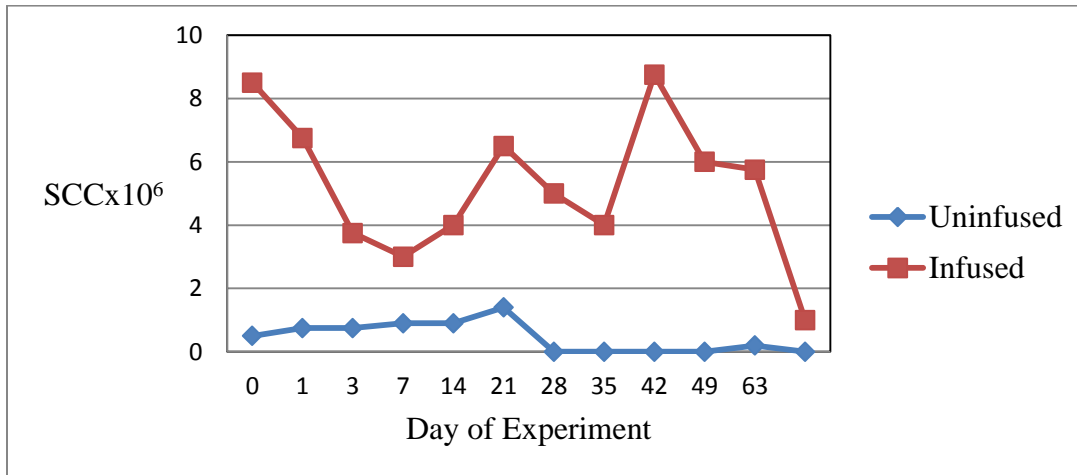


Figure 2. Somatic cell counts by day in uninfused and infused quarters.

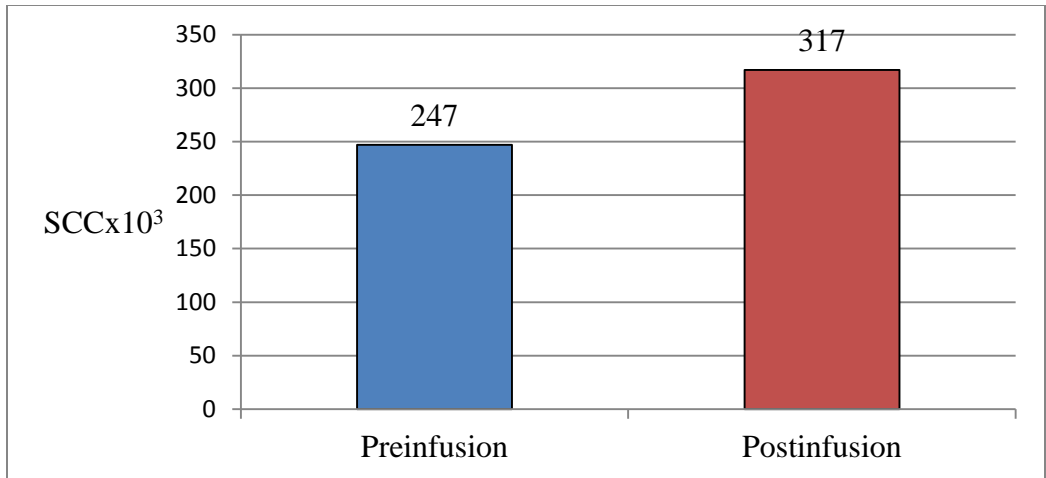


Figure 3. Somatic cell counts in uninfused, uninfected quarters that were adjacent to treated quarters before and after Nolvasan[®] infusion.

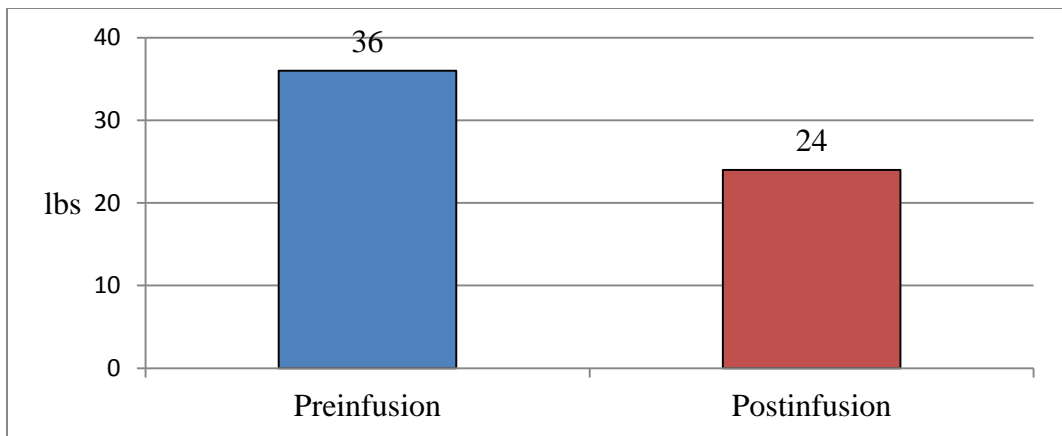


Figure 4. Average daily milk yield in treated cows before and after infusion.

Histological examination of infused quarters revealed that milk-producing tissues had involuted and appeared similar to “blind” or nonfunctional quarters, exhibiting significant reductions in milk synthesizing tissues. Six cows completed a nonlactating period and calved; all of the Nolvasan[®]-infused quarters remained nonfunctional in this subsequent lactation.

Results suggest that a chronically infected quarter that does not respond to antimicrobial therapy can be rendered nonfunctional without damage to adjacent quarters. This procedure prevents abnormal secretion from being comingled with herd milk and elevating SCC and bacteria counts. In addition, such quarters no longer constitute a herd reservoir for mastitis-causing organisms, which can spread to uninfected cows. This method also allows the salvage of genetically superior animals for breeding stock. It is imperative to remember, however, that this procedure involves extra-label drug use and should be performed within the context of a valid veterinary/client patient relationship. Moreover, treated quarters must be identified in a manner to insure that they are not milked into the tank to avoid the presence of drug residues in herd milk.