

High Prevalence of Subclinical and Clinical Mastitis Caused by Environmental and Minor Pathogens in a Large Dairy Herd in Iran

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Introduction

Environmental and minor pathogens seem to be of increasing significance, especially in situations where major contagious pathogens (*Streptococcus agalactiae* and *Staphylococcus aureus*) have been controlled using post-milking teat disinfection and dry cow therapy. Herd management practices that successfully control contagious pathogens fail to control coliforms and many streptococcal bacteria. Coagulase-negative staphylococci (CNS) are the most prevalent bacteria isolated in herds using currently recommended control measures and *Corynebacterium bovis* (*C. bovis*) was identified as the cause of up to 20% of all cases of clinical mastitis in some herds.

Materials and Methods

The study was conducted to determine the etiology and prevalence rate of mastitis in a large Iranian Holstein dairy herd southwest of Tehran, in which a high incidence of clinical mastitis and the presence of *S. agalactiae* in bulk tank was noted. The herd has not been using a proper mastitis control routine, particularly efforts to control environmental mastitis. Because of the high incidence of clinical mastitis, largely due to environmental and minor pathogens, a high proportion of cows were usually out of the tank.

A few months before the beginning of the study, the herd had experienced an outbreak of fatty liver syndrome, with 15 clinically affected dairy cows. Composite milk samples were aseptically collected from all lactating cows (n=852) for bacteriologic culture. Microbiological procedures were conducted in accordance with National Mastitis Council (NMC) standards.

Results

Culture results revealed that 461 (54.11%) cows were subclinically infected and 97 (11.38%) were clinically infected with environmental and contagious pathogens, with an overall point prevalence rate of 65.49%. *C. bovis* were isolated from 145 (31.45%) subclinical and 26 (26.8%) clinical cases, coliforms from 128 (27.76%) and 27 (27.83%), environmental streptococci from 91 (19.74%) and 10 (10.3%), CNS from 84 (18.22%) and 3 (3.09%), *S. agalactiae* from 32 (6.94%) and 7 (7.21%) and *S. aureus* from 18 (3.9%) and 4 (4.12%).

Conclusions

Results indicated a high prevalence of subclinical and clinical mastitis caused by environmental (coliforms and environmental streptococci) and minor pathogens (*C. bovis* and CNS) in this herd. It seems that poor bedding management and udder preparation, improper post-milking teat disinfection and dry cow therapy, as well as the occurrence of fatty liver syndrome (as an immune suppressant) were probably responsible for this outbreak. These results suggest that an effective mastitis control program should consider other aspects of the dairy enterprise, including nutritional and metabolic programs. In addition, although *C. bovis* is historically considered is a minor mastitis pathogen, these results add weight to some reports suggesting this bacterium as a major pathogen of subclinical and clinical importance. If *C. bovis* appears to be a major pathogen, further studies on more effective control of this organism are needed.