

Relationship of Teat-end Hyperkeratosis to Incidence of Clinical Mastitis and Composite Milk Somatic Cell Count in a Large Holstein Dairy Herd with an Environmental Mastitis Problem

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Introduction

Several studies have demonstrated a positive association between teat-end hyperkeratosis (TEHK) and subclinical or clinical mastitis. Some studies found no positive correlation between them. To the knowledge of the authors, there is only one longitudinal study which demonstrated a negative association between teat-end callosity thickness and clinical *Escherichia coli* mastitis (Neijenhuis *et al*, 2001). The objective of this study was to determine whether TEHK is associated with an increased risk of clinical or subclinical mastitis in a large Holstein dairy herd in Tehran province of Iran, in which the monthly incidence rate of clinical mastitis was 9% prior to the beginning of the study.

Materials and Methods

Using a system of teat-end lesion classification (described by Neijenhuis *et al*, 2000), all teats (n=3332) were scored immediately after the clusters were removed. The degree of TEHK was determined using the scores N (normal) to VR (very rough). Teat-ends were classified as group 1: moderate-to-severely hyperkeratotic (scores R: rough or VR) or group 2: normal-to-slightly hyperkeratotic (score N or S: slight). The incidence rate of clinical mastitis (IRCM) was calculated in two groups within a month following the scoring. Composite milk somatic cell count (CMSCC) was measured using the fluoro-optoelectronic cell counting method (COMBIFOSS 5000, Fossomatic, Foss Electric, Denmark). During the study

period, the farm's personnel took randomly aseptic milk samples from a proportion of the clinically mastitic quarters. Microbiological procedures were conducted in accordance with National Mastitis Council (NMC) standards. Statistical analysis was performed using a Chi-squared test with 95% confidence interval (CI).

Results

Based on bacterial culture, *E. coli* was identified as the predominant cause of clinical mastitis. There is a significant difference between IRCM in group 1 (1.41%; 16 out of 1131 quarters) and group 2 (2.58%; 57 out of 2201) ($P < 0.05$). Udder quarters with corresponding teat-ends from group 1 were at 0.54 times more risk of getting clinical mastitis, compared to quarters with corresponding teat-ends from group 2 during the study period (Relative risk=0.54, 95% CI: 0.33, 0.87). There is no significant difference between mean CMSCC in cows with at least one teat-end from group 1 (265,000 cells/ml) and those with four teat-ends of group 2 (343,000) ($P > 0.05$).

Significance

The present study found a negative association between moderate-to-severe TEHK and IRCM in a herd with a predominantly *E. coli* mastitis problem, suggesting that the association between TEHK and clinical mastitis might be pathogen-specific. No relationship between TEHK and CMSCC was found at the test day.