Bacterial Findings at Clinical Mastitis in Swedish Dairy Cows

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Abstract

Clinical mastitis is one of the most common diagnoses that give rise to antibiotic treatment in Swedish dairy cows. Knowledge of causative bacterial agents is important for optimal handling of clinical mastitis both on individual and herd level. Therefore, the aims of the study were to investigate the prevalence of bacterial agents in cases of clinical mastitis investigated 2013-2018, and to identify changes in findings compared with previous national studies.

From October 2013 to December 2018 milk samples from dairy cows with clinical mastitis were taken by field veterinarians in the District Veterinary Organization. Inclusion criteria were lactating cow with visible pathological changes of the milk indicating inflammation. Participating veterinarians were situated in most parts of Sweden and were told to collect milk from the 3 first cases each month that fulfilled the criteria. Samples were sent to the National Veterinary Institute and were cultured on bovine blood agar according to accredited routines. Species identification was done by MALDI-TOF MS. All isolated staphylococci were tested for beta lactamase production by the clover leaf method.

During the study period, 733 cows were sampled. Culturing resulted in 827 bacteriological diagnoses (Table 1). The dominating pathogen isolated was *Staphylococcus aureus* with 28% of the diagnoses. Of the *S. aureus* isolates, 3% produced beta lactamase. *Streptococcus dysgalactiae* and *Escherichia coli* each constituted 15% of the bacteriological diagnoses, *Streptococcus uberis* 11%, *Trueperella pyogenes* 8%, *Klebsiella* spp. 3%, non-aureus staphylococci 3%, *Streptococcus agalactiae* 1% and various other bacteria 6%. Samples with no growth or contamination each constituted 5% of the diagnoses.

The bacterial panorama, with *S. aureus* as the dominating bacterial diagnosis, has not shifted significantly compared to similar investigations in 1994-1995 and 2002-2003 (Table 1).

Table 1. Distribution (%) of bacteriological diagnoses from cases of clinical mastitis in dairy cows in 2013-2018 (n=827) versus national studies performed 1994-1995 (Nilsson et al., 1997; n=837) and 2002-2003 (Ericsson Unnerstad et al., 2009; n=1056).

Bacteriological diagnoses	1994-1995*	2002-2003**	2013-2018
Staphylococcus aureus	21.6	21.3	28.2
Streptococcus dysgalactiae	13.5	15.6	15.5
Escherichia coli	16.0	15.9	15.1
Streptococcus uberis	15.3	11.1	11.4
Trueperella pyogenes	9.2	6.1	7.6
Klebsiella spp.	2.2	4.2	2.9
Non-aureus staphylococci	4.2	6.2	2.8
Streptococcus agalactiae	0.5	0.6	1.2
Other bacteria	3.3	4.1	5.7
Contaminated	5.9	10.6	4.8
No growth	7.9	4.5	4.8

*Nilsson, L., A. Franklin, and H. Funke. 1997. Antimicrobial drug susceptibility of bovine udder pathogens in Sweden. In: Proceedings of the Society of Veterinary Epidemiology and Preventive Medicine, Chester, England.

**Ericsson Unnerstad, H., A. Lindberg, K. Persson Waller, T. Ekman, K. Artursson, M. Nilsson-Öst, and B. Bengtsson. 2009. Microbial aetiology of acute clinical mastitis and agent-specific risk factors. Veterinary Microbiology. 137, 90-97.

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