Efficacy of Tylosin Treatment and Factors Affecting Cure Rate of *Staphylococcus aureus* Subclinical Mastitis

Carlos Catracchia[1], Martín Pol[1], Liliana Tirante[1], Javier Chaves[1]
[1]Lactodiagnóstico Sur, Olivos, Buenos Aires, Argentina.

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INTRODUCTION

Staphylococcus aureus remains as the most prevalent contagious pathogen throughout the world. Proper milking techniques, appropriate treatment of clinical cases, dry cow therapy, post dipping, and culling of chronically infected animals have been used successfully by producers to reduce new intramammary infections or to cure existing ones. The segregation of infected animals has shown its efficacy in preventing new infections, however not all producers can handle extra groups (Wilson et al., 1995). Cure rates of infections occurring in lactating animals might be high when young animals or recent infections are treated (Pol et al., 2007).

The objective of this study was to evaluate the efficacy of extended therapy of intramuscular tylosin in relation to cow factors that might affect the probability of cure of subclinical intramammary infections caused by *Staphylococcus aureus*.

MATERIALS AND METHODS

First and second lactation animals from 5 dairy farms were sampled post calving or based on their test-day somatic cell count (CCS/mL). Animals with more than 200,000 cells/mL were selected for sampling after each test day. Duplicate composite samples were obtained during monthly visits to the farms and sent immediately to the laboratory. A 0.05 mL aliquot was plated in blood agar and identification of bacterial species was made following NMC guidelines. If *Staphylococcus aureus* were isolated in one of two samples, animals were treated daily during 5 consecutive days with 1 mL of tylosin (Tylan 200, Elanco Animal Health) per 20 kg of bodyweight. Duplicate composite samples were obtained 31 ± 3,1 days post treatment. Therapeutic failure was considered when one or two of the samples yielded *Staphylococcus aureus*. Cases that resulted contaminated were not included in analysis.

To evaluate factors that may affect cure rate, days in milk at diagnosis of *Staphylococcus aureus* intramammary infection (DIMD), days in milk at treatment (DIMT), somatic cell count log at treatment (SCCLT), somatic cell count log post treatment (SCCLP), and parity were recorded. The means of cow factors that may affect cure rate were compared using ANOVA. Association of parity with cure was evaluated with a Chi-square test. The change in somatic cell count log before and after treatment of high somatic cell count cows was evaluated using a paired t-test. All statistical analysis were carried out with Statistix 8.0.

RESULTS AND DISCUSSION

A total of 67 cows were treated as result of post calving sampling and 34 cows were treated due to their test-day SCC. Overall cure rate was 69%. Post calving treated animals were diagnosed at 35.1 ± 7.6 DIM, and treated at 53.6 ± 7.8 DIM. Cure rate of post calving treated animals was 85%. High somatic cell count cows had a SCCLT of 2.1 ± 0.1, and a SCCLP of 1.8 ± 0.3. Cure rate of high somatic cell count animals was 47%.

None of the studied cow factors means resulted in significant differences among cured and non-cured animals (Table 1). However, parity was associated with cure rate (*P* = 0.01). First lactation animals (n=44) had a higher cure rate (81%) than second lactation animals (n=57; cure rate=58%). Therefore, first lactation animals were 3.3 times more likely to result cured than second lactation animals (OR: 3.3; CI: 1.3 – 8.3). As expected, somatic cell count log at treatment (SCCLT) of cured high somatic cell count cows were higher than SCCLP (mean difference = 0.54, SE = 0.24, *P* =0.05), while non significant differences were found in non-cured cows (mean difference = 0.17, SE = 0.19, *P* = 0.38)

Table 1. Mean and standard deviation (SD) of cured and non-cured *Staphylococcus aureus* IMI treated with tylosin post calving or after a high SCC test-day (>200,000 SCC/mL).

	POST CALVING COWS			HIGH SOMATIC CELL COUNT COWS		
	CURE	NON-CURED		CURE	NON-CURED	
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
	N=54	N=13	*P*	N=18	N=16	*P*
DIMD	37.5 (33.6)	24.9 (21.3)	0.20	149.5 (121.1)	107.7 (106.8)	0.33
DIMT	54.3 (33.2)	50.6 (30.3)	0.71	161.4 (120.5)	126.5 (107.6)	0.42
SCCLT	1.3 (0.7)	1.3 (0.5)	0.87	2.0 (0.5)	2.17 (0.4)	0.63
SCCLP	1.2 (0.82)	1.5 0.7)	0.23	1.5 (0.8)	2.0 (0.8)	0.15

References

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