

Clinical mastitis management based on the use of a quick bacteriological method (petrifilm®) as a preliminary test to antimicrobial therapy in dairy lactating cows

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Summary

Early systematic treatment of clinical mastitis (CM) leads to an exposition of many lactating animals to antimicrobials without any kind of causative diagnostic. The objective of this study was to assess the economic benefits of using a cow-side diagnostic test to identify agents of CM and treating them accordingly.

Material & Methods

Cows from a single Czech dairy herd were enrolled at the time they show signs of clinical mastitis. Only mild and moderately severe CM were sampled, and milk was plated onto Petrifilm® test kits (3M, New York, USA). Cows did not get any antimicrobial treatment until results from the milk culture are available (24 h), however injectable NSAID was allowed. Cows associated to sterile or Gram- cultures were left

untreated. Cows with Gram+ cultures were systematically treated with 200 mg of cefalexin intramammary b.i.d., 2 days (RILEXINE 200, Virbac, France). Clinical recovery was judged on day 7 after the identification of the case. Monthly incidence rates of CM were recorded on two consecutive years (2015 & 2016), as well as milk yield, milk discarded for CM, treatment costs. Data were processed using MS Excel.

Results

In 2015 and 2016, the herd size remained stable (250 cow-month). The monthly incidence rate of CM decreased for a while (n.s.) with an average of 19 (CI_{95%}[15;23]) in 2015, and 15 in 2016 (CI_{95%}[11;18]). On 176 CM detected in 2015, 131 were identified as mild or moderate cases and subsequently cultured on PetriFim®. Non-*Staph aureus* Gram+ was the outcome of the culture in more than 9 out of 10 cases (Graph 1). Finally 3 cases were excluded (relapse treated some days before, mild case turning severe case). 121 case were treated with 200 mg cefalexin intramammary, and 7 cases were left untreated. The overall clinical recovery rate was 82.8%, (CI_{90%}[77.3%;88.3%]).

In 2015, 6 different intramammary medicines were used on the farm whereas the 2016 routine treatment was based on cefalexin only. In 2016 2.264 litres of milk were discarded every month vs. 3.340 in 2015 ($p=0.01$). Purchases of veterinary medicines for the purpose mastitis therapy decreased for a while, but the diagnostic generated additional costs. Other results are presented in table 1.

Graph 1. Distribution of mastitis pathogens identified with PetriFilm

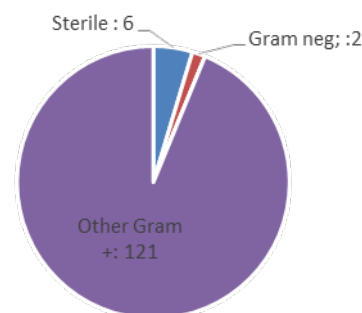


Table 2. Milk production, BMTSCC & antimicrobial expenditure in 2015 & 2016 (data with similar superscripts within the row differ, $p<0.05$)

	2015	2016
Milk production (kg/month)	174.506 ^a	193.309 ^a
BMTSCC (x 1000 cells/mL)	271 ^b	237 ^b
Antibiotic costs (Kč/month)	6.767	5.278

Conclusion

Testing cases of clinical mastitis and treating Gram+ mild and moderate cases only resulted in a simplification of clinical mastitis treatment routine with the use of 4 intramammary infusions of 200 mg of cefalexin, and less milk discarded. The clinical cure rate was high in this trial, and the time elapsed between the detection of the disease and the application of the treatment (24h) had a limited impact on it, if any. Due to the high prevalence of Gram+ organisms, many animals were finally treated with antimicrobials, and few financial savings were observed.