

7 Summary

Comparison of two different strategies for the treatment of retained fetal membranes in dairy cows and evaluation of an additional treatment with proteolytic enzymes

The objective of this study was to compare two different strategies for the treatment of retained fetal membranes and to evaluate the effect of proteolytic enzymes. The field trial was conducted on 40 small and medium-sized commercial dairy farms with 28 to 166 cows in the region of Lower Saxony, Germany.

Cows that retained their fetal membranes for ≥ 12 hours postpartum were assigned in alternating order to one of four treatment groups. In group A (n=63) and B (n=54) no attempts were made to remove the membranes manually and no intrauterine treatments were performed. Animals with fever ($\geq 39,5^{\circ}\text{C}$) were treated systemically with Ceftiofur (1 mg/ kg BW) on three to five consecutive days. Cows in group A received 4800 FIP-E of Chymotrypsin, 480 FIP-E of Trypsin and 60 FIP-E of Papain/ 100 kg BW systemically on three consecutive days. In group C (n=74) and D (n=73) an attempt was made to remove the membranes. The animals received an intrauterine treatment with three uterine pills (6000 mg Tetracyclinhydrochlorid) for three consecutive days. In case of fever the animals received Amoxicillin-Trihydrat (6000 mg per animal intramuscularly) on three to five consecutive days. For the first three days of the study, animals in group D received 4800 FIP-E of Chymotrypsin, 480 FIP-E of Trypsin and 60 FIP-E of Papain/ 100 kg BW systemically.

At day 28 to 34 postpartum (postpartum examination) and 14 days later all cows were treated with 500 μg of Cloprostenol intramuscularly. All animals were examined by rectal palpation for signs of chronic endometritis at day 28 to 34.

Treatment success was evaluated by clinical cure rate (no fever after a maximum of 5 systemic treatments), reproductive performance parameters (days to first service, days to conception, first service conception rate, overall conception rate, proportion of cows pregnant) and the prevalence of chronic endometritis 28 to 34 days postpartum. Outcome variables were evaluated for groups A to D and for treatment strategies A+B (systemic antibiotic treatment in the case of fever) and C+D (attempt of manual removal of the membranes with intrauterine treatment and systemic antibiotic treatment in case of fever).

A significant difference was found for the incidence of fever in treatment strategies A+B vs. C+D (76.9 % vs. 21.1 %). But the comparison of cure rates revealed no differences between A+B vs. C+D (93.7 % vs. 97.9 %, $p>0,05$). Although the incidence of fever was lower, cows

in C+D received 236 antibiotic treatments more than cows in A+B. With regard to the prevalence of chronic endometritis there were no significant differences (33.9 % vs. 37.3 %) between the two treatment strategies (A+B vs. C+D). Reproductive performance parameters and the milk yield in the first ten days following enrollment and at milk test days 1 to 3 showed no significant differences between A+B and C+D.

The application of proteolytic enzymes as an additional treatment in groups A and D (n=136) showed no statistically significant effect on clinical cure rate, culling rate and reproductive performance measures compared to groups B and C.

The results of this study showed that, with respect to clinical cure rate, reproductive performance parameters, and milk yield, the two tested strategies (systemic antibiotic treatment in case of fever vs. attempt of manual removal linked with local and possibly systemic antibiotic treatment) are equal. With regard to economical considerations the systemic application of ceftiofur in case of fever is the favourable strategy of treatment because of lower costs for veterinary interventions. With regard to a prudent and selective use of antibiotics in food producing animals the systemic application of ceftiofur in case of fever is the favourable strategy of therapy. The additional use of proteolytic enzymes showed no beneficial effects.