

8 Summary

Periparturient mastitis in primiparous cows: Etiology, prophylaxis and effects on health and productivity.

A retrospective cohort study was conducted to investigate the effect of clinical mastitis in heifers during the first week post partum (p.p.) on subsequent health and productivity. Primiparous cows that had calved between August 15th, 1996 and August 14th, 1997 (n=1389) were included in the study. Milk samples were collected from each quarter post partum prior to first milking. The predominant group of bacteria found were *Staphylococcus spp.* (72.4 %) followed by *Streptococcus spp.* (13.7 %) and *E. coli* (5.5 %). Intramammary infections at calving increased the risk of clinical mastitis within the first week post partum. The cow incidence of mastitis until day 7 p.p. was 38.7 %. Cows were classified into three groups. Group 1: Animals with clinical mastitis prior to calving (n=35); Group 2: Animals with clinical mastitis between calving and 7 days p.p. (n=503); Group 3: Animals without mastitis until 7 days p.p. (n=851). Mastitis prior to parturition and mastitis within the first week post partum increased the risk of further cases of mastitis and culling during the first 45 days of lactation. Milk yield of Group 2 was lower and somatic cell counts were higher than in Group 3.

The effect of teat dipping with a barrier teat dip prior to parturition on intramammary infection (IMI) and clinical mastitis during the first five days post partum was investigated in a split udder trial in 149 Holstein-Frisian heifers. Their left front and right hind quarters were dipped three times weekly with a barrier teat dip containing iodine from day 260 of gestation until parturition. The opposite quarters (right front and left hind quarter) served as untreated controls. Bacteria were isolated from 50.8 % of quarter milk samples collected immediately after parturition prior to first machine milking (52.3 % in treated quarters and 49.3 % in control quarters). Coagulase-negative staphylococci (CNS, 37.2 % of the isolated bacteria in treated vs. 36.1 % in control quarters) and *S. aureus* (30.8 % vs. 29.3 %) were predominantly found in the samples.

No significant differences were found between treated and control quarters regarding IMI and somatic cell count 3 to 5 days and 3 to 5 weeks post partum. The incidence of clinical mastitis was comparable in both groups (17.1 % in treated quarters vs. 16.1 % in control quarters). During the first five days post partum 34.2 % of heifers showed signs of clinical mastitis, 16.6 % of the quarters were affected.

A placebo-controlled field study was performed to study the effect of a herd specific vaccine against *S. aureus* on intramammary infection (IMI), somatic cell count (SCC) and clinical mastitis in heifers. Heifers in the vaccine group (n=164) were vaccinated twice, 5 and 2 weeks prior to parturition in the area of the supramammary lymphnodes. Animals of the control-group (n=157) received the same treatment with a placebo containing no bacterial antigen.

There were no bacteria found in 50.8 % of the quartermilk samples which have been taken right after parturition (52.3 % in vaccinated vs. 49.2 % in control animals). The prevalence of *S. aureus* did not differ between groups (12.7 % vs. 16.1 %). There was no difference between vaccine and placebo-group regarding cases of clinical mastitis during the first five days (29.2 % vs. 31.1 %) and the first three months post partum (40.9 % vs. 47.1 %).

Regarding the geometric mean of the SCC at the first four milk test days and of the quarter milk samples taken 3 to 4 weeks post partum, the only significant difference was on milk test day three. SCC was lower in vaccinated animals. There was no difference in milk yield.

The findings in quarter milk samples which were collected from cases of clinical mastitis before the onset of treatment did not differ between the groups. *S. aureus* was isolated in 32.7 % and 29.3 % of affected quarters in vaccinated and control animals, respectively.

Culling rates for the first three months after parturition were similar for both groups.

Neither teat dipping prior to parturition nor vaccinating primigravid dairy heifers with a farmspecific vaccine against *S. aureus* did improve periparturient udder health in primiparous cows on this farm.