

9. Summary

Epidemiology of periparturient mastitis in primiparous dairy cows

The objective of this study was to investigate the current situation concerning clinical mastitis in primiparous cows in dairy farms in Brandenburg, risk factors for clinical mastitis and the influence of clinical mastitis on the whole lactation. In the first step, we investigated the time and frequency of clinical mastitis during the first lactation. We included heifers that had calved between June 2003 and May 2004 on 15 farms around Berlin. We divided the cows in three groups for comparing parameters of lactation and culling rates. These groups were:

1. Primiparous cows without clinical mastitis during the first lactation.
2. Primiparous cows with a case of clinical mastitis during the first month of lactation.
3. Primiparous cows with a first case of clinical mastitis after the first month until the end of lactation.

The parameter analysed were age of calving, culling date and reason and furthermore milk yield and somatic cell count (SCC) on the milk test days during the whole lactation.

In addition we conducted a survey on hygiene and management on the 15 study farms. We developed a capture form for all the areas that female calves came across during their adolescence until their first parturition. The analysis was carried out using a scoring system.

The farms were classified as “good” or “poor” in the following 4 areas:

1. Birth to pregnancy,
2. Close up and parturition,
3. Milking hygiene
4. Herd and farm.

The association between the categories “good” and “poor” in the farm areas and the three groups of udder health was analysed.

We included 4395 heifers. Only 64.9% of them experienced no case of clinical mastitis during the first lactation. In the periparturient period, from day 5 before until day 30 after calving, 19.3% developed a case of early clinical mastitis. During the following months we detected an average monthly incidence rate of 2.8%. Cows with a case of periparturient mastitis that survived the first lactation had further cases of mastitis than cows with a case of clinical mastitis anytime else during the whole lactation.

Overall, the risk of clinical mastitis was associated with the age of calving. Heifers that were ≤ 25.1 months at first calving had fewer cases of early mastitis (16.2%). Of heifers that calved with an age over 26.8 month, almost one quarter (23.6%) got a case of periparturient clinical mastitis. However, when farm was included in the analysis, the effect of age of first calving was not longer observed. This indicated that age of first calving and risk of clinical mastitis were both associated with farm management.

The comparison of milk yield in the three groups showed, that the influence of farm is more important for the milk yield, than the udder health alone. The highest milk yield was found in cows that had a first case of mastitis between month 2 and month 10 of lactation. This indicates that a higher milk yield was a risk factor for clinical mastitis. Milk production did not differ significantly between cows with an early case of mastitis and cows that remained healthy.

The somatic cell count was influenced by udder health. Cows without cases of clinical mastitis showed the lowest SCC (70.000/ml). The geometric mean of the SCC was between 80.000/ml and 138.000/ml in the other two groups. The differences between the groups were not influenced by the factor farm.

The culling rates between the three groups differed strongly. Almost every third cow with a case of periparturient mastitis was culled before the end of the first lactation. Among the culled cows with early clinical mastitis, the udder health was the predominant culling reason (53.8%). The high culling rate and incidence for clinical mastitis in all months of lactation, especially in the periparturient period, is a sign of a problematical situation of udder health in primiparous cows in the study farms.

No association was detected between the hygiene and management in the raising period from birth to pregnancy. Likewise the condition of the farm and lactating herd didn't show any influence. Risk factors in the close up and parturition area showed a significant influence on the risk to early clinical mastitis. In "poor" farms we found an incidence of 22.9% for cases of early periparturient mastitis compared to 17.1% in "good" farms. The incidence of clinical mastitis during the rest of lactation after the first month was significantly higher in farms with poor milking hygiene (26.2%) than in farms with good milking hygiene (12.3%). The overall categorization of the farms was also associated with the risk of clinical mastitis. More cows remained healthy in the good compared to the poor farms (72.2% vs. 57.9%).