

Housing and Feeding-Related Risk Factors for Abomasal Displacement and Cecal Dilatation/Dislocation in Dairy Cows

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Introduction, Materials and Methods

Abomasal displacement (DA) and cecal dilatation/dislocation (CDD) are 2 common diseases of the alimentary system in dairy cows. A similar etiopathogenesis for both diseases has been postulated. Goals of this study were to investigate the risk factors associated with DA and CDD and to compare both diseases directly.

The epidemiologic factors were investigated at the individual cow level and at the herd level from a 2-year (1993-1995) hospital-based database. The study included 149 cases of DA, 158 cases of CDD, and a group of control cows without digestive disorders (n=448). Only animals with at least one calving were included in the study.

In a first step, individual cow factors of CDD and DA were compared to each other. Then, each disease group was compared to the control cows to determine the risk factors specific to each disease. The factors breed, parity, days postpartum at the occurrence of the disease (DIM), and several milk yield-related variables were investigated. Then, analyses were conducted at the herd level, including also feeding and housing variables. Statistical analyses included uni-variable testing of the chosen factors with Chi-square analysis after categorization of the continuous variables, followed by multi-variable logistic regression analysis for each disease, with all the factors presenting P-values <0.15 in the Chi-square analysis.

Results and Conclusion

At the cow level, the end model for DA included breed (higher risk in Holstein, lower risk in Swiss Braunvieh), DIM (higher risk in the first 20 days pp), and standard milk yield (STDMILK) (higher risk in high

yielding cows). The end model for CDD included only parity (higher risk in the second lactation) and DIM (high risk in the second half of lactation). The direct comparison between CDD and DA showed even more marked differences with regard to breed, DIM and STDMILK.

At the herd level, the uni-variable analysis for DA showed interesting tendencies indicating an influence of feeding: pasture (low risk) and excessive use of protein concentrate (high risk) in summer; first food offered in the morning (high risk for non-roughage) in winter. In the final multi-variable model these factors disappeared, which possibly can be explained by the relatively small number of cases. The final model for DA at the herd level included, as in the cow level model, breed and STDMILK. Furthermore, a high risk for DA was found in herds without sodium chloride supplementation and a low risk was found in herds with mineral salt supplementation.

These results clearly indicate new feeding-linked risk factors associated with the occurrence of DA. Furthermore, marked breed predispositions were found.

Due to the retrospective character of the study, it was possible to investigate only relatively poorly defined feeding risk factors. However, the associations for sodium chloride and mineral salt were statistically strong ($P < 0.001$), and deserve to be verified in future prospective studies including more detailed analysis of the mineral status.

Furthermore, although both diseases occurred at comparable frequencies in our population, the epidemiology of DA and CDD appeared to be different with regard to the investigated factors. Therefore, it can be concluded that similar etiopathogenesis of these diseases is unlikely.