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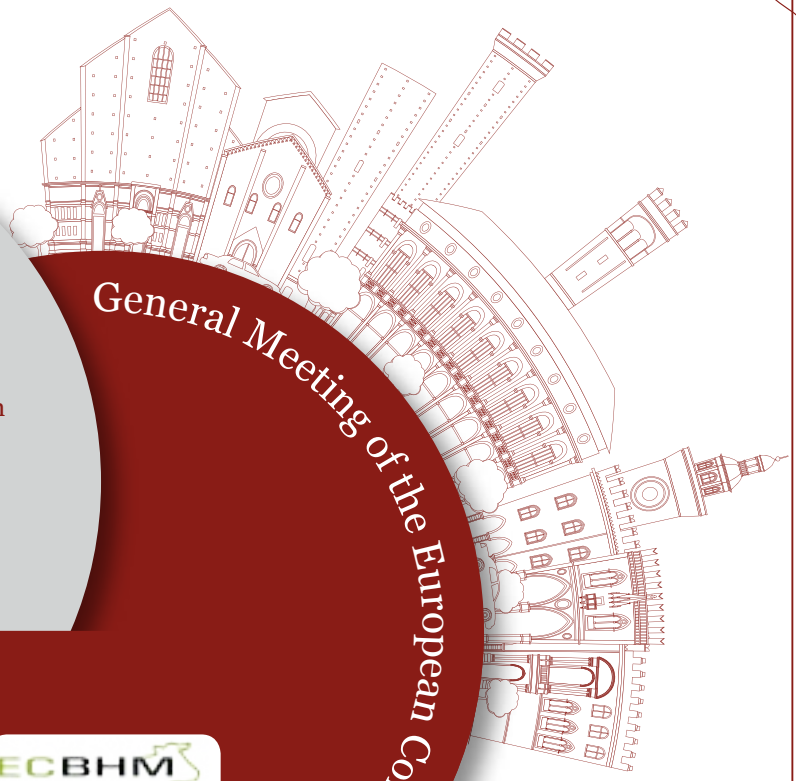

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ULTRASONOGRAPHIC EVALUATION OF THE MAMMARY CISTERN SIZE DURING DRY PERIOD IN HEALTHY DAIRY COWS

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Introduction

The dry period (DP) is defined as the nonlactating period prior to parturition in dairy cows. During the DP, new udder tissue is formed and prepared for the next lactation [1]. The aim of this study was to evaluate the udder cistern (UC) size during the dry period by the ultrasound technique.

Methods

Ten Italian Friesian cows were included, for a total of 40 quarters. All the cows underwent the same management condition. The following inclusion criteria were set: 1) no heifer; 2) abruptly drying-off; 3) no mastitis or other diseases at drying-off and during the whole study period. A convex probe (5 MHz) was placed immediately cranial to the insertion of each teat on the udder in order to visualize the UC of each quarter. The probe was first held parallel to the teat for a longitudinal section, then a 90° rotation was applied for the cross-section view [2]. All the animals were evaluated at the drying-off (T0) and 24 hours later (T1), then regularly until the end of the dry period (T7, T14, T21, T28, T38, T48, T58), during the colostrum production phase (TCPP) and at 7 days in milking (T7PP). The Spearman test was applied to evaluate the correlation between ultrasonographic UC size (UUCS) assessment and time. The Friedman test and the Dunn's test for multiple comparisons as *post-hoc* were performed to compare the cross-section UUCS of the forequarters (FQCS) and hindquarters (HQCS) and the longitudinal section UUCS of the forequarters (FQL) and hindquarters (HQL) at T0 *vs* T58 *vs* TCPP *vs* T7PP. Values of $p < 0.05$ were considered statistically significant.

Results

No subject developed mastitis or other diseases during the study period. The ultrasound evaluation of the UUCS was easy to perform in field conditions. A total of 440 images have been measured. There was a statistically significant negative linear correlation between the time and the UUCS for FQCS and FQL ($r = -0.95$; $p < 0.0004$) and for HQCS and HQL ($r = -0.90$; $p < 0.002$). The Friedman test was statistically significant ($p < 0.0001$), showing that the UUCS at T58 were lower, compared to other times for FQCS, FQL and HQCS. T0 did not differ from TCPP.

Conclusions

No studies can be found in literature evaluating the UUCS during the dry period. Studies on UC cellular proliferation showed that the UC cellular involution during dry period peaked 25 days after the dry-off [3,4]. In our study, the UUCS decreased throughout the whole dry period and started to increase at the beginning of the next lactation. This difference could be due to a discrepancy between the UC cellular proliferative and the ultrasonographic evaluation of the UC. In conclusion, the evaluation of the UUCS during the dry period in healthy cows was feasible for field conditions. UUCS might give useful information for the udder dry period monitoring.

References

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