

Association between Endometrial Cytology and Uterine Ultrasound Findings in Postpartum Dairy Cows

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Uterine infections during the postpartum period affect ovarian follicular growth and disturb ovulation in cattle. One of the first uterine responses to surface infection is intensive migration of polymorphonuclear cells (PMN) into the lumen; PMN are a type of white blood cell that acts as the first line of defense against infectious organisms. We investigated the association between endometrial cytology and uterine ultrasound findings, and their effect on pregnancy in 16 primiparous and 23 multiparous dairy cows. On day 25 postpartum, a cytological sample was obtained from the endometrium of all cows using a modified cytobrush, smears prepared, stained, and PMN% assessed under a light microscope. The quantity of uterine fluid on day 25 postpartum, interval from calving to first ovulation and pregnancy status was determined by transrectal ultrasonography. Cows were grouped as having low (<8%) or high (>8%) PMN count, with 75% of primiparous and 30% of multiparous cows classified as high PMN. A greater proportion of cows with uterine fluid had high PMN (64% vs. 21%), and the PMN increased from 14% to 34% as the quantity of uterine fluid increased. The mean interval from calving to first ovulation was longer in high, than in low PMN cows (45 vs. 32 d), particularly in primiparous cows with high PMN (49 d). The presence of uterine fluid was not associated with interval to first ovulation. Although the conception rate to first service (at 92 d postpartum on average) did not differ between PMN groups (35 vs. 37%), the cumulative pregnancy at 270 d tended to be higher in low than in high PMN (80% vs. 58%) multiparous cows. However, cows that had uterine fluid on day 25 postpartum had a greater conception rate at first service (44 vs. 21%) and a shorter interval from calving to pregnancy than those with no uterine fluid (161 vs. 208 d).

Implications: Combining transrectal ultrasonography with endometrial cytology on day 25 postpartum has diagnostic value in the assessment of uterine inflammation. Future studies should focus on the relationship between ultrasound findings at 4th week postpartum and fertility in primiparous and multiparous dairy cows.

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