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Effects of intra-uterine infusion with E. coli lipopolysaccharide on systemic and local inflammatory and immune response.

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Objectives were to evaluate the effects intra-uterine infusion with E. coli lipopolysaccharide (LPS) on periperal neutrophil function, hematology, intra-uterine cell population, and expression of endometrial interleukin-1 (IL-1). Cows (31±3 d postpartum) diagnosed with endometritis by Metricheck were assigned to receive 0 (NC, n = 31), 150 (150LPS, n = 33), or 300 (300LPS, n = 34) µg of E. coli LPS. A sub-sample of cows (n=25/treatment) had blood sampled on the day of infusion (d0) before treatment and at 2 and 6 h after treatment for determination of neutrophil phagocytosis (PHAGO) and oxidative burst (OXID) and expression of CD18 and L-selectin. All cows had blood sampled at 0, 2, 6, 24, 48 h after infusion for hemogram and were examined for endometritis using Metricheck on d 7, and 28 and for sub-clinical endometritis using cytrobush on d 0 (before infusion), 1, 2, and 7. Data was analyzed by ANOVA for repeated measures or by chi-square using MIXED and FREQ procedures, respectively. Percentage of neutrophils positive for PHAGO was (P=0.02) greater for 300LPS (66.8±1.5%) compared with NC (61.7±1.5%) and 150LPS (61.9±1.5%), but the intensity of PHAGO was not different (P=0.36). Treatment did not affect percentages of neutrophils positive for OXID (P=0.49) and for expression of CD18 (P=0.76) and L-selectin (P=0.80). Intensity of OXID tended (P=0.08) be affected by treatment. Treatment had no effect on hematological parameters. Percentage of cows with endometritis 7 (59%; P=0.47) and 28 (16.7%; P=0.92) d after treatment was not affected by treatment. No differences in percentage of polymorphonuclear cells in uterine cytology were observed on d0 (P=0.35) or thereafter (P=0.55). Percentage of cows with > 10% of PMNC in uterine cytology was not different among treatments on d 0 (48.5%;P=0.27) and d 1 (85.3%;P=0.27), but on d 7 150LPS (51.7%) and 300LPS (50%) cows tended (P=0.08) to be less likely to have > 10% of PMNC in uterine cytology than NC (75.9%) cows. Intra-uterine infusion with 300µg of LPS resulted in slight increase in percentage of neutrophils positive for PHAGO.

KEYWORDS
Lipopolysaccharide
Uterus