

POST-MATING ENDOMETRITIS AFTER LOW DOSE HYSTEROSCOPIC INSEMINATION IN THE MARE

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While some authors proposed that hysteroscopic insemination may reduce post-mating endometritis in mares with delayed uterine clearance (DUC), others maintained that the hysteroscopic procedure is inflammatory and should not be used in DUC mares. Our objective was to evaluate the inflammatory response after hysteroscopic insemination in reproductively normal and DUC mares. We hypothesized that low dose hysteroscopic insemination would result in less severe endometritis than routine uterine body insemination. Reproductively normal ($n = 64$) and DUC mares ($n = 65$) received each of four treatments during estrus, during four consecutive estrous cycles: Uterine body insemination (1×10^9 spermatozoa, 20 mL) [UB], hysteroscopic insemination (5×10^6 spermatozoa, 0.5 mL) [HYST], sham hysteroscopic insemination (semen extender, 0.5 mL) [SHAM] and hysteroscopic infusion of seminal plasma (0.5 mL) [SP]. The presence of intrauterine fluid was evaluated by ultrasonography per rectum 24 h and 48 h after treatment. Uterine secretions were collected with an intrauterine tampon and a culture instrument 48 h after each procedure to determine the concentration and percentage of leukocytes. Categorical data were analyzed with a Chi-square test. The response variables concentration and percentage of leukocytes were evaluated with a mixed effect linear model. Correlation and regression analysis were performed to evaluate the effect of duration of hysteroscopy on leukocyte numbers. More DUC than normal mares had intrauterine fluid 24 h and 48 h after inseminations ($p < 0.05$). There was no effect of treatment on fluid accumulation in normal mares ($p > 0.05$). There was a significant effect of treatment on fluid accumulation in DUC mares at 24 h. More mares had fluid after HYST and SHAM than UB and SP ($p < 0.05$); however, at 48 h, this difference was no longer significant ($p > 0.05$). The percentage of leukocytes was not different between mare groups or treatments ($p > 0.05$). The concentration of leukocytes after UB insemination in normal mares was greater than after any of the other treatments (normal-UB = 30.8 ± 14.5 , normal-HYST = 0.0 ± 0.0 , normal-SHAM = 2.4 ± 1.8 , normal-SP = 7.6 ± 5.8 , DUC-UB = 4.1 ± 1.2 , DUC-HYST = 3.9 ± 3.1 , DUC-SHAM = 3.2 ± 1.4 , DUC-SP = 4.6 ± 1.9) (mean $\pm$ S.E.M., $\times 10^6 \text{ mL}^{-1}$, $p = 0.045$). There was a strong positive correlation ($R = 0.98$) between the duration of the hysteroscopic procedure and the percentage and concentration of leukocytes in normal but not in DUC mares ($p < 0.05$). Regression analysis showed that if hysteroscopy extended beyond 7 min, endometritis was likely to persist 48 h after the hysteroscopic procedure. We conclude that although hysteroscopic insemination induces endometritis in reproductively normal and DUC mares, the inflammation is not greater than after standard insemination procedure. Although more DUC mares had fluid 24 h after hysteroscopy, the number of leukocytes was not greater than after uterine body insemination. Therefore, there is no contraindication to using hysteroscopic insemination in mares with delayed uterine clearance.

Keywords: Equine; Mare; Endometritis; Insemination; Hysteroscopy