Postbreeding Uterine Fluid Accumulation in a Normal Population of Thoroughbred Mares: A Field Study

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The incidence of postbreeding fluid accumulation is approximately 15% in a normal population of Thoroughbreds. Both the incidence and severity of intraluminal fluid accumulation increase with age. In addition, barren mares are more likely than maiden and foaling mares to accumulate fluid in the uterine lumen the day after breeding. Postbreeding fluid accumulation treated with uterine lavage or uterotonic drugs the day after breeding had only a minor effect on reproductive performance under the conditions of this study. Authors’ addresses: Hagyard-Davidson-McGee Associates, 4250 Iron Works Rd., Lexington, KY 40511 (Zent) and Dept. of Clinical and Population Sciences, College of Veterinary Medicine, 1365 Gortner Ave., University of Minnesota, St Paul, MN 55108 (Troedsson and Xue). © 1998 AAEP.

1. Introduction
A transient uterine inflammatory reaction to semen serves to clear the uterus of excess semen and contaminants associated with breeding. While most mares effectively clear the uterus of excess semen and inflammatory products before the decent of an embryo from the oviduct 5–6 days after ovulation, other mares develop a persistent postmating endometritis that results in reduced fertility. These mares have a delayed uterine clearance that is due to impaired myoelectrical activity. Clinically, mares with persistent breeding-induced endometritis accumulate fluid within the uterine lumen following breeding. The objective of this study was to determine the incidence of persistent postbreeding fluid retention in a population of intensively managed Thoroughbred mares at stud farms in central Kentucky. In addition, the reproductive performance of mares that were treated for persistent postbreeding fluid accumulation was compared with that of normal mares.

2. Materials and Methods
A total of 411 mares from seven farms were examined over 746 estrous cycles. Mares were bred by natural service to stallions (n = 130) with various fertility. All mares were infused postbreeding with a combination of procaine penicillin 6000 IU and gentamicin 0.5 g as part of the routine breeding management at the farms. The study was performed on commercial breeding farms, which did not allow for untreated controls. Transrectal ultrasonography was used to examine the mares for the presence of intraterine fluid the
day after breeding (14–30 h after breeding). The amount of fluid was estimated and graded as none, minimal, or moderate to large. Mares with no or minimal fluid received only antibiotic infusion. If a moderate or large amount of fluid was present, one of the following treatments was initiated: (1) uterine lavage and oxytocin, (2) oxytocin alone, (3) prostaglandin, or (4) prostaglandin and oxytocin. The choice of treatment was based on clinical judgment and was not randomized.

The incidence of postbreeding fluid accumulation was determined, and its association with age, class (maiden, barren, foaling), heat cycle, obstetric history, and covering stallion were investigated and analyzed by using a chi-square test. In addition, pregnancy rates and pregnancy losses were compared between mares with postbreeding fluid accumulation and those with normal postbreeding uterine clearance. Conception rates and pregnancy loss were analyzed by using a categorical data-modeling program (CATMOD) in the SAS program.  

3. Results
The incidence of uterine fluid the day after breeding was 15.6% for all examined cycles (13.7% of all mares). A moderate to large amount of fluid was detected, and the mares were subsequently treated in 11.4% of all examined cycles (9% of all mares). Both the incidence and severity of postbreeding fluid accumulation increased with the age of the mare (p < 0.01). Barren mares were more likely than maiden and foaling mares to accumulate intraluminal fluid the day after breeding (p < 0.01). However,mares that were bred over multiple cycles did not accumulate fluid more often than mares bred over a single cycle. Previous dystocia increased the incidence of fluid accumulation postbreeding (p < 0.01), and these mares were less likely to become pregnant (p < 0.05). An interaction was observed between sire and postbreeding fluid accumulation (p < 0.01), but no relation was observed between fluid accumulation and stallion fertility (conception rate per cycle). The accumulation of a small amount of fluid the day after breeding did not affect conception rate, and the accumulation of a moderate to large amount of fluid had only a small effect on the conception rate per cycle in treated mares (51.1% in mares with fluid vs. 60.2% in all mares; p = 0.07). Conception rates were not affected by the choice of treatment.

Pregnancy loss prior to 60 days was similar in all groups.

4. Discussion
Persistent breeding-induced endometritis is a major clinical problem in equine practice. In this study, approximately 15% of a normal population of Thoroughbreds retained intrauterine fluid the day after breeding. All mares were treated with a post-breeding intrauterine infusion of penicillin. The post-breeding infusion of antibiotics has routinely been performed for years on all mares at the participating farms in an attempt to eliminate or reduce the uterine bacterial contamination that is associated with natural service. Since no untreated control mares were used, it is not clear if this treatment influenced the results of the study.

It was concluded that several risk factors, such as age, foaling status, a history of dystocia, and the stallion to which a mare is bred, predispose for impaired uterine clearance after breeding. However, treatment of postbreeding fluid accumulation with uterine lavage or uterotonic drugs the day after breeding had only a minor effect on reproductive performance under the conditions of this study.

References and Footnotes


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