Net Effect of Foregoing Uterine Culture and Cytology in First-Cover Foaling Mares

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Relying wholly on a reproductive exam, foregoing performing uterine cultures and cytologies in mares on their first cover after foaling does have a negative effect on pregnancy rate and no effect on the rate of early embryonic death and abortion. Authors' addresses: Rood and Riddle Equine Hospital, PO Box 12070, Lexington, KY 40511 (Barber, Bradecamp, Howard); The Ohio State University, 0375 Veterinary Medicine Academic Building, 1900 Coffey Road, Columbus, OH 43210 (Mollenkopf); e-mail: bbarber@roodandriddle.com. *Corresponding and presenting author. © 2012 AAEP.

1. Introduction

Most Thoroughbred breeding sheds require a negative uterine culture for all barren and maiden mares, as well as for all mares returning on subsequent cycles. It is not, however, typically required for mares on their first cover after foaling.

Many practitioners rely on using uterine cytology as a routine part of their pre-breeding workup because it gives valuable information regarding the uterine environment. When combined with the uterine culture and a quality exam, a great deal of information can be gleaned to help determine whether or not a mare is suitable for breeding.

Because breeding sheds do not require a negative uterine culture for first-trip foaling mares, it has become standard procedure on many breeding farms to forego uterine culture and cytology in this group of mares. Practitioners are largely left to evaluate the mare's suitability for breeding without the benefit of lab backup. The purpose of this study was to determine if following this policy is detrimental to the conception and foaling rates of first-cover foaling mares that are deemed suitable for mating during routine workups.

2. Materials and Methods

A group of 421 Thoroughbred foaling mares, over two breeding seasons, and on several different farms were evaluated, deemed suitable for mating, and included in this study. Ages ranged from 4 to 21 years. The average and the mean ages were 9 years.

The study was designed to determine the effect of managing mares based on breeding shed guidelines. It was not designed to determine the percentage of post-foaling mares that had abnormal uterine culture or cytology. Therefore, mares were selected on the basis of a reproductive exam that included uterine palpation, ultrasound, and speculum exam. Conditions that excluded a mare include, but are not limited to cervical defects, severe vaginal/vulvar tears, abnormal discharge, excess intrauterine fluid, and abnormal teasing patterns. Essentially, the mares selected were those that were determined to be suitable for mating, based on the clinical repro-
productive examination that did not include culture and cytology prior to breeding.

Uterine cultures and cytologies were obtained prior to breeding on the first cover after foaling. The examiner was blinded to the results of these tests until the conclusion of the study. Therefore, suitability for mating, pre-breeding, and post-breeding treatments were not influenced by the results of the cultures and cytologies. All mares were bred and treated as they normally would have been, following farm and breeding shed guidelines.

Mares were either bred on their natural heat or were “short-cycled” after their foal heat, depending on the farm or mare owners’ preference. No mares that were bred on their foal heat were included.

Uterine cultures were obtained by passing a guarded culture rod through a speculum into the uterus. Cytologies were taken by tapping the fluid and cells out of the cap on the culture rod onto a microscope slide.

Mares were divided into the following groups: (1) “Normal” (no growth on culture and <2 neutrophils per high-power field on cytology); (2) positive culture; (3) positive cytology; and (4) positive culture and cytology. Mares were examined 15 days after breeding for pregnancy, and pregnancy rates were compared for all groups. Additionally, pregnancies were followed to determine foaling rates of each of the groups as well as the rate of abortion and early embryonic death.

Data were described as frequency distributions, using proportions of the study population. The primary outcomes of interest, including failure to conceive on first cover and failure to maintain first-cover pregnancy, were first compared between mares classified as normal and non-normal, using 2×2 analysis of contingency tables. Observed proportions were evaluated using odds ratios and their 95% confidence intervals. The potential confounding effects of year and age of the mare were then assessed, using multivariable logistic regression analysis.

3. Results

Three hundred twelve of the 421 (74.1%) mares were classified as normal. In the non-normal groups, 16 (3.8%) had a positive culture only, 82 (19.5%) had a positive cytology only, and 11 (2.6%) had both a positive culture and cytology. Three hundred fifteen (74.8%) of all mares bred conceived on the first cover; 242 of the 312 (77.6%) mares that were considered normal conceived on the first cover. Of the non-normal mares (all other groups combined), 73 of the 109 (67.0%) conceived on the first cover. There is a statistical difference in these two groups (P = 0.03). Mares in the non-normal group were 1.7 times more likely to fail to conceive than were mares in the normal group.

The groups were further broken out and compared with the normal group 1 mares (242/312 or 74.1% first-cover conception): 10 of the 16 (62.5%) group 2 mares (positive culture only) conceived on the first cover; 59 of the 82 (72.0%) group 3 mares (positive cytology only) conceived on the first cover; and 4 of the 11 (36.4%) group 4 mares (positive culture and cytology) conceived on the first cover. There are statistical differences in the conception rates within this.

Of the 242 normal, group 1 mares that conceived on the first cover, 232 were able to be followed to the conclusion of the pregnancy (2 died and 8 were lost to reporting). In this same group, 206 mares foaled, 11 aborted, and 15 were early embryonic deaths (206/232, 87.5%). All 10 (100%) of the mares in group 2 delivered foals. Fifty-one of the 59 (86.4%) pregnancies in group 3 produced foals. Four pregnancies were lost to abortion and four to early embryonic death. All four mares in group 4 produced foals. There were no abortions or early embryonic death in this group. There is no statistical difference in the number of abortions or early embryonic death in any of these groups.

4. Discussion

Performing uterine culture and cytology in first-cover foaling mares that have been examined and screened before breeding provides some value. First-cover conception rate was decreased from 77.6% in mares with a negative culture and <2 neutrophils per high-power field to an overall rate of 74.8%. Abortion and early embryonic deaths were not increased as a result of following the current practice of foregoing uterine culture and cytology in first-cover foaling mares.

Because of the small numbers of positives, conclusions should not be drawn concerning the effect that breeding mares with a positive uterine culture and/or cytology has on conception. These effects have already been well established in other works. The rate at which they occur in this study group is important. Nearly 20% of mares had a positive cytology, yet this group still achieved a 72% first-cover conception rate. It should be remembered that the majority of samples were taken <30 days after foaling, and there may have been some residual post-foaling inflammation. Of the 421 sampled mares, only 27 (6.4%) had positive cultures, of which 14 (51.0%) achieved and maintained pregnancy.

When considered altogether, the net positive that would be gained by changing current policies is a <3% increase in conception rates and no change in fetal loss. With these results in mind, it is difficult to justify changing current policies. The added expense that would be incurred as a result of performing uterine cultures and cytologies in this large group of mares would be significant. Practitioners and mare owners will have to consider whether or not the added expense and effort is worth the benefit.

Reference