Presence of bacteria in the reproductive tract of healthy stallions and its relation to the fertility of mares

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Colonization of bacteria in the reproductive tract of both stallions and mares can cause numerous fertility issues. Breeding operations that only utilize natural cover breeding are faced with a difficult challenge to control disease outbreaks of pathogenic bacteria. The current study used Thoroughbred stallions and mares from central Kentucky to (1) investigate the occurrence of potentially pathogenic bacteria on the stallion’s external genitalia based on cultures, (2) determine if there is an impact on pregnancy rates and pregnancy loss when a stallion has a positive culture and continues to breed, and (3) investigate the occurrence of bacteria and type of isolate in the mare’s uterus after breeding by live cover to stallions with or without positive bacterial cultures.

This study utilized 15 Thoroughbred stallions and 206 mares from two central Kentucky farms during the 2010 and 2011 breeding seasons (selection criteria for stallions: book size >20 mares, normal fertility, and all mares bred by live cover). Samples for bacteriological evaluation were taken from the prepuce and the urethra after ejaculation (n=201) of stallions. Uterine swabs (n=264) were collected 18-36 hr after breeding and farm records were utilized to track pregnancy rates at day 14 and pregnancy losses (any loss of pregnancy after day 14). Statistical analyses were performed using SAS software (SAS Institute, INC., Cary, NC). The GLIMMIX procedure was used to test the effect between stallion culture results with pregnancy rates and pregnancy loss in mares. Random effects were the farm and stallion. Fixed effects were stallion culture results, beginning status of the mare, number of times the mare had been bred, and year. Chi-square was used to test the effect between stallion culture results and post-breeding mare uterine culture results, the effect between bacterial types found on the stallion cultures and pregnancy rates and pregnancy loss, and the effect between bacterial types found on the stallion cultures and bacterial types found on the post-breeding uterine cultures.

Of stallion cultures, 22.4% were positive for potentially pathogenic bacteria, with S. zooepidemicus (51.1%) being the most common. There was no difference in pregnancy rates at day 14 and pregnancy losses between stallions negative or positive for potentially pathogenic bacteria. Lastly, 29.2% of the uterine cultures were positive for potentially pathogenic bacteria, with S. zooepidemicus (90.9%) being the most common. There was no difference in the occurrence of bacteria or type of isolate found on uterine cultures after breeding stallions with or without positive cultures. In conclusion, the occurrence of potentially pathogenic bacteria on the stallion’s external genitalia did not affect fertility of stallions or mares.

Keywords: Stallion, external genitalia, bacterial flora, uterus, pathogenic bacteria