Assessing the Reproductive Health of a Mare Prior to Breeding
Dr. Tom Riddle
Dr. Michelle LeBlanc

During the breeding seasons of 2001 through 2004, Dr. Tom Riddle and Dr. Michelle LeBlanc set out to evaluate the best way to assess a mare’s reproductive health prior to breeding. The study was conducted with 2,123 paired culture and cytology specimens taken from 970 Thoroughbred mares. It examined the relationships between 28-day pregnancy rates, uterine cytology (the study of cell types in the uterus), and culture results. Uterine cultures and cytologies are performed to identify mares with reduced fertility and have long been standard tests to determine whether a mare to be bred is "clean."

As with many laboratory tests, there are limitations on the value of uterine cultures. Because it is possible to culture bacteria that do not affect fertility (contaminants or non-pathogens), uterine cytology may be done to better determine the mare's status. Uterine cytologies are performed on small fluid samples that may be taken from the uterine lining by several different methods. In this study, the fluid was collected in the cap of a guarded culture swab.

At the farm, a microscope slide is made from the collected fluid and is then returned to the Rood & Riddle laboratory for special staining and examination by laboratory technicians, who identify and record the different cell types. The primary cells seen are epithelial cells (uterine lining) and neutrophils (white blood cells). A small number of neutrophils may be seen in a normal uterus, but increased numbers are an indication of inflammation, which may cause infertility.

This study found that performing both tests, not just one, was important in identifying problem mares. Mares with a normal cytologies and a negative cultures had a 28-day pregnancy rate of 60% per cycle, while mares with normal cytologies and positive cultures had a 36% per cycle rate. Those with positive cytologies (severe inflammation) and negative cultures had a 23% rate. Mares with both a positive cultures and a positive cytologies (severe) had an 18% rate.

Conclusions

- If only uterine cultures were performed to identify mares with compromised fertility, 55% of the problem mares would have been missed.
- If only uterine cytologies were performed, 17% of problem mares would have been missed.
- Cytology will identify almost twice (1.8) as many problem mares as uterine culture but cannot be relied on totally because it misses almost one in five problem mares.

Dr. Riddle presented the findings of the study at the 2005 annual convention of the American Association of Equine Practitioners.

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During the performance of a uterine culture, the veterinarian passes a guarded culture swab through the cervix to swab the uterine wall. The swab is then placed in culture media, which provides nutrients to keep the bacteria viable until the culture can be returned to the laboratory for set up and incubation.

At the laboratory, culture plates are examined daily for three days for the presence of bacteria, and additional tests are done to identify the type of bacteria present. When bacteria are found, tests are performed to identify the antibiotics that would treat the infection effectively.