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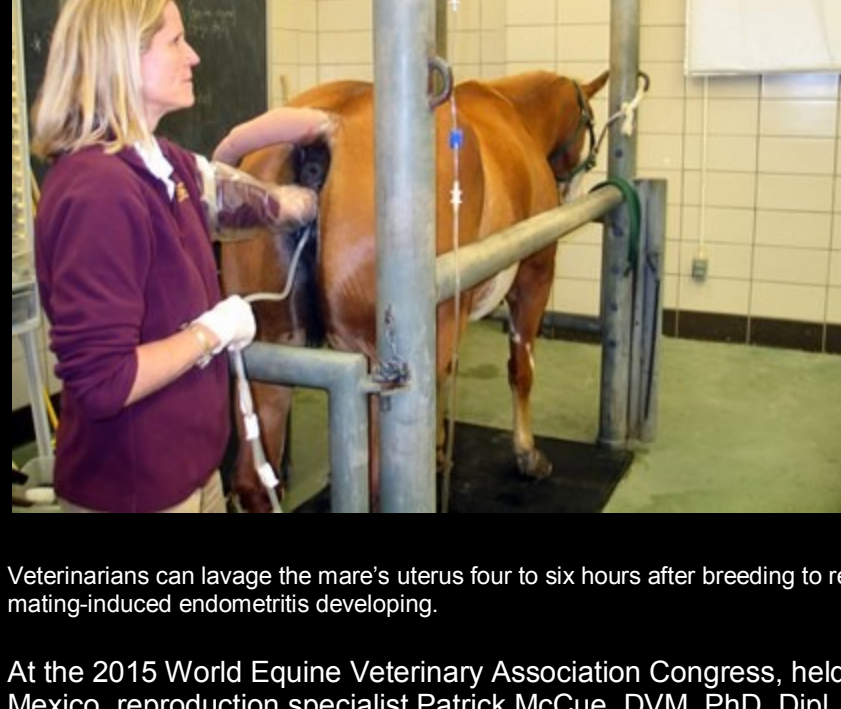
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Breeding the Problem Mare With Endometritis

In theory, horse breeding is simple: Mare plus stallion equals foal. However, it's not always that straightforward. From sterile stallions to anestrus mares, reproductive veterinarians are often faced with challenging cases that require some problem-solving and subsequent treatment.



Veterinarians can lavage the mare's uterus four to six hours after breeding to reduce the likelihood of persistent mating-induced endometritis developing.

At the 2015 World Equine Veterinary Association Congress, held Oct. 8-10 in Guadalajara, Mexico, reproduction specialist Patrick McCue, DVM, PhD, Dipl. ACT, took a closer look at managing the problem mare. McCue is a professor of equine theriogenology at Colorado State University's Equine Reproduction Laboratory, in Fort Collins.

Several scenarios can lead to a patient being labeled a "problem mare," McCue said, including:

- Not becoming pregnant after being bred to a fertile stallion over the course of three estrous cycles;
- Being unable to successfully carry a foal to term;
- Having known reproductive pathology; or
- Having behavior issues related to reproduction.

He said it's crucial to make an accurate diagnosis of the problem before developing a treatment and management program, and he encouraged practitioners to devise a systematic plan for evaluating problem mares.

McCue reviewed several conditions that can contribute to reproductive problems in mares.

Persistent mating-induced endometritis—One of the most common causes of reduced fertility in mares, persistent mating-induced endometritis is a chronic inflammation of the uterine wall lining after breeding or artificial insemination.

McCue said mares, especially older ones, are sometimes unable to clear spermatozoa, fluid, and inflammatory debris from their uteri after breeding. "Inadequate or insufficient muscular contractions of the uterus and/or a cervix that failed to relax sufficiently are the most common causes for the retained fluid and persistent inflammation," he said.

Should an embryo enter the uterus that still has inflammatory fluid present, it would be unable to survive, McCue said.

Further, he added, this persistent inflammatory fluid buildup can cause prostaglandin release from the endometrium (uterine lining) and adversely affect development and function of the corpus luteum, a structure formed after the follicle ovulates, and subsequently decreases production of progesterone (the so-called pregnancy hormone). This can result in low progesterone levels and/or short-cycling, meaning the mare returns to estrus sooner than normal.

McCue said treatment is focused on reducing the severity and duration of the mare's inflammatory response and clearing her uterus of detrimental substances. He recommended breeding at-risk mares only once during an estrous cycle and timing the breeding to take place immediately prior to ovulation. For additional measures, veterinarians can lavage the mare's uterus with sterile saline or sterile lactated Ringer's solution (which contains sodium lactate, sodium chloride, potassium chloride, and calcium chloride) four to six hours after breeding and/or administering oxytocin starting four to six hours after breeding. The oxytocin will help stimulate uterine contractions to remove the fluid from the uterus.

Bacterial endometritis—Uterine inflammation in conjunction with a bacterial infection is another common reproductive problem resulting in reduced fertility.

"A majority of young mares eliminate bacterial contamination of the uterus following mating, parturition, intrauterine manipulations, and other events," McCue explained. "In contrast, some older multiparous mares (those that have had many foals) may be unable to spontaneously eliminate pathogenic organisms from their uteri and are considered to be susceptible to bacterial infection."

He said many factors could place mares at a higher risk of developing bacterial endometritis, including:

- Contamination during breeding;
- Urine accumulation in the vagina and/or uterus;
- Trauma from breeding or birth;
- Failure of the natural defense mechanisms, such as white blood cell function, local antibody production, etc.; and
- Poor perineal conformation.

McCue said the most common bacteria found in mares with chronic endometritis are *Streptococcus zooepidemicus*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae*.

"The general principles of a treatment regimen are to remove the source of infection, aid in physical clearance of the uterus, eliminate pathogenic organisms by local infusion with antimicrobial agents, and reduce future contamination by enhanced reproductive management," he said.

He noted that if poor perineal conformation or decreased vulval muscle tone is a concern, the mare might benefit from a Caslick's procedure (suturing closed the upper part of the vulva) to prevent contaminants from entering the reproductive tract.

McCue also recommended the veterinarian follow up with the mare after treatment to ensure the infection is gone.

Fungal endometritis—A third cause of endometritis—and one that is more difficult to diagnose and eliminate—is fungus in the uterus. "Fungal infections of the uterus most commonly occur in older mares with reduced uterine defense mechanisms receiving prolonged antibiotic therapy," McCue said.

McCue said there are a variety of clinical presentations for fungal endometritis, ranging from no clinical signs to severe purulent (producing pus) endometritis with chronic infertility.

Chronic fungal or bacterial infections can cause significant permanent damage to the endometrium if not diagnosed accurately and treated appropriately. The chronic inflammation and scar tissue (fibrosis) development can lead to markedly reduced fertility.

McCue said fungal endometritis treatment focuses on correcting predisposing factors (including conformational deficits), removing debris from the uterus via uterine lavage, and using local and systemic antifungal agents to eliminate the offending fungi.

What if Treatment Doesn't Work?

Despite your best efforts, treatment doesn't always work. And in these cases, McCue had the following recommendations for veterinarians:

- Take a closer look at the case, re-examining the original diagnostics and considering whether there could be multiple issues at play;
- Consider alternative or complementary therapeutic techniques; and
- Employ advanced reproduction techniques, such as embryo transfer or intracytoplasmic sperm injection.

Finally, he encouraged veterinarians to consider consulting with a reproductive specialist, referring the patient for a second opinion, or performing additional diagnostic procedures if the initial treatments are not effective.