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## The "Problem" Mare: A Challenging Case of Endometritis

It's a scenario that many veterinarians face throughout their career: Nearly every veterinarian in the area has tried to get this mare pregnant to no avail, and now it's their turn. Perhaps they wonder, "Where do I start? What approach do I take? Can I help them?"

This situation is not so unusual and is similar to the case Margo Macpherson, DVM, MS, Dipl. ACT, from the University of Florida's College of Veterinary Medicine, described during her in-depth interactive session at the 2015 Annual Convention of the American Association of Equine Practitioners, held Dec. 5-9 in Las Vegas.

"An owner approached me, asking to breed her 'problem' mare using artificial insemination, and due to costs I could only breed her once," said Macpherson, setting the stage for her presentation.

In preparation, Macpherson mentally ran down the list of causes of poor pregnancy rates: fibrosis (scarring) of the reproductive tract, poor semen quality, timing of insemination, and, of course, endometritis.

"Endometritis, or inflammation of the inner lining of the uterus called the endometrium, is the No. 1 reason for poor pregnancy rates in mares," explained Macpherson. "Endometritis can occur due to bacterial infection or, more commonly, as a side effect of breeding."

Sperm cells promote inflammation in the uterus of all mares. Most mares are able to resolve the inflammation shortly after the breeding process; however, some mares have a prolonged inflammatory response after breeding—a condition called post-mating induced endometritis (PMIE).

Approaching the problem mare in question, Macpherson determined that she indeed had endometritis. She came to this diagnosis using tools such as ultrasonography, low-volume uterine lavage (wash) with analysis of the uterine fluid that was collected, and an endometrial biopsy and microscopic analysis of the uterus wall. Based on published guidelines, Macpherson categorized the mare's endometritis as category IIB (see table at left).

"A primary finding from the examination was that the mare was producing excess amounts of mucus when she was in heat," said Macpherson.

"I chose to simply observe the mare during her first ovulation and found significant swelling of the wall of the uterus and fluid inside the uterus," she added. "This made me very nervous. It was not a good way to start."

Her plan of attack on Days 1 and 2 of the next estrus was to reduce the inflammation in the uterus by lavaging with saline, administering cloprostenol (prostaglandin F2 $\alpha$ , a medication used to manipulate a mare's breeding cycle) to squeeze excess fluid out of the uterine wall, and instilling N-acetylcysteine to help break down any mucus produced by the uterus when the mare was in heat.

On Day 3 of estrus, Macpherson repeated the N-acetylcysteine and administered deslorin acetate to induce ovulation.

An ultrasound examination on Day 4 of estrus revealed significant fluid inside the uterus (some of which was the N-acetylcysteine). Macpherson removed the fluid with uterine lavage and inseminated the mare with cooled fresh semen later that same day. She performed additional treatments in the days following ovulation to help the uterus "calm down" so that the embryo would enter a hospitable environment.

Alas, Macpherson's pregnancy rate was 0% on Day 14, despite lavaging and administering oxytocin and oral altrenogest to remove uterine fluid and help increase "tone" of the uterine wall following insemination.

"There was simply too much fluid in the uterus," Macpherson explained. "The embryo needs to make contact with the endometrium to maintain pregnancy and allow the placenta to form."

Macpherson encouraged the owner to try one more nerve-wracking cycle. Using equally aggressive techniques and examining and treating the mare daily (a time-consuming and expensive endeavor), the mare was successfully in foal on the second cycle.

Macpherson theorized that performing deep-horn insemination also played a role in the outcome of this case, bypassing the fluid and debris in the uterus.

"There are several morals to this story," she said. "No. 1 is that owners need to be educated about endometritis *before* attempting to breed. Everyone wants the process to go smoothly with as little drama as possible so you need to give yourself some wiggle room with challenging cases.

"Second, recall that there is no cookbook for the treatment of endometritis," Macpherson stressed. "Use all the tools you have available, including anatomic correction of physical abnormalities, antibiotics, mucolytics, immunomodulators such as platelet-rich plasma, and even steroids. All of these are appropriate as long as you do no harm.

"Finally, each mare should be treated as an individual, and not all mares need all treatments," she said. "An educated owner is a happy owner, so the more the owner is involved in the decision-making process the less surprised he or she is when things deviate from the expected norm."

### Classification of Endometritis in Mares / Uterine Biopsy Grades

Category	Description	Estimated Foaling Rate
I	No significant changes in the endometrium. No treatment is required.	80–90%
IIA	Most mares fall into this category, with a wide range of signs including inflammation and microscopic changes to the wall of the uterus (e.g., cystic glandular distention and lymphatic lacunae).	50–80%
IIB	Same changes as IIA but more severe.	10–50%
III	Widespread, severe changes to the endometrium that include periglandular fibrosis or inflammation.	<10%