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Reproductive Management of the Problem Mare

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Introduction

The objective of this paper is to review protocols for management of common reproductive problems in mares. Reproductive problems are encountered frequently over the course of a breeding season. A problem mare may be defined as 1) a mare that is not pregnant after being bred to a fertile stallion over 3 estrous cycles, 2) a mare that cannot successfully carry a foal to term, 3) a mare with known reproductive pathology, or 4) a mare with behavioral issues related to reproduction.

An accurate diagnosis of a problem is a prerequisite for development of a rational treatment program and institution of an optimal management strategy. A systematic and thorough diagnostic plan should be devised for each problem mare.

Persisted Mating-Induced Endometritis. A transient inflammatory response in the endometrium is an inevitable consequence of mating by either natural service or by artificial insemination in all mares. Research has shown that the inflammatory response is triggered by the presence of spermatozoa in the uterus.

A persistent post-mating inflammatory response may develop in older susceptible mares that cannot physically clear fluid and inflammatory products from their uterus. 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. If the inflammation persists, the embryo will not survive when it enters the uterus 5-6 days after ovulation. Persistent uterine inflammation may also result in premature destruction of the corpus luteum and result in lower progesterone levels or short-cycling.

Management of mating-induced endometritis is aimed at limiting the severity and duration of the inflammatory response and clearing the uterus of fluid, sperm, inflammatory by-products and bacteria. Ideally, a mare susceptible to persistent mating-induced endometritis should be bred or inseminated only once during an estrous cycle and the breeding should be timed to occur immediately prior to ovulation. The uterus may be lavaged with sterile saline or sterile lactated Ringer’s solution 4-6 hours after mating. The lavage procedure is performed by infusing 1 liter of fluid into the uterus at a time and is repeated until the recovered fluid is clear (i.e. free of cloudy debris). Oxytocin may be administered beginning 4-6 hours after mating to stimulate uterine contractions and assist physical clearance of fluid and inflammatory by-products.

Bacterial Endometritis. Bacterial endometritis is a significant cause of decreased reproductive performance in mares due to failure of conception or early embryonic loss. A majority of young mares rapidly eliminate bacterial contamination of the uterus following mating, parturition intrauterine manipulations or other events and are considered to be ‘resistant’ to infection. In contrast, some older multiparous mares may be unable to spontaneously eliminate pathogenic
organisms from their uterus and are considered to be ‘susceptible’ to infection. Factors that predispose mares to uterine infections include contamination at breeding, pooling of urine in the anterior vagina and uterus, trauma from parturition or breeding, and failure of natural uterine defense mechanisms. Poor perineal conformation, decreased muscular tone of the vulva and cranial displacement of the anal sphincter may lead to aspiration of air and fecal material into the reproductive tract.

The most common bacterial organisms cultured from mares with chronic endometritis are *Streptococcus zooepidemicus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. Numerous protocols exist for treatment of endometritis. 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.

Treatment often includes a uterine lavage to remove fluid, inflammatory by-products and bacteria, followed by infusion of antibiotics into the uterus and/or systemic antibiotics. If the perineal conformation is poor or the muscular tone of the vulva is inadequate, a Caslick procedure may be warranted to prevent recontamination. A follow-up examination and culture is recommended to confirm that the infection has been eliminated.

**Fungal Endometritis.** Fungal infections of the uterus most commonly occur in older mares with reduced uterine defense mechanisms receiving prolonged antibiotic therapy. Fungal endometritis may be difficult to eliminate and may result in significant damage to the endometrium. Clinical signs vary in intensity from none to severe purulent endometritis with chronic infertility.

Therapy is directed at correcting predisposing factors and conformation defects, physical removal of uterine debris by lavage and elimination of infection by intraluminal infusion of antifungal drugs.

1. Correct predisposing factors, such as poor perineal conformation, pneumovagina and urine pooling.
2. Uterine lavage with 1 liter of fluid, repeated as needed. Options for lavage include sterile saline, povidone-iodine (1:10 dilution of stock 10% povidone-iodine solution with saline making a 1% lavage solution), and vinegar (1:50 dilution of household vinegar with 0.9% saline; i.e. add 20 mls vinegar to 1 liter of saline).
3. Intrauterine treatment may include antifungal medications such as nystatin, miconazole, fluconazole, clotrimazole or other agents.
4. Systemic administration of fluconazole once daily for 2 to 3 weeks may also be warranted as part of an antifungal therapy protocol.

**Alternative Plan for Problem Mares**
What do you do if your therapy is unsuccessful? Consider the possibility of multiple pathologic processes contributing to the problem(s); re-evaluate your original diagnostic results and therapeutic plan; consider alternative or non-traditional therapies; consider consultation with a specialist or consider referral; and finally consider advanced assisted reproductive techniques, such as embryo transfer, oocyte transfer, or intracytoplasmic sperm injection if you want to pursue a pregnancy.