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A Tradition of Leadership and Excellence in Equine Medicine

Breeding the problem mare

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February 2005

Introduction

Management of the problem mare can be one of the most challenging and frustrating aspect of equine reproduction. It is usually time consuming and can be costly. There is no magical treatment that works on all problem mares. To be successful in getting the problem mare from conception to parturition it takes hard work, good management and appropriate medical therapies.

The problem mare

When a mare becomes a problem is at the discretion of the owner, farm manager or the veterinarian. A mare should be regarded as a problem if she is on a well managed breeding farm and fails to conceive on three or more cycles when bred to a fertile stallion. Unfortunately the fertility of a stallion may not be known to the mare owner, manager or the veterinarian, also in artificial insemination programs fertility can be greatly reduced by improper collection, handling, and improper insemination techniques

All aspects of management need to be evaluated when dealing with the problem mare. In addition to a good reproductive history other management practices need to be evaluated. These may include: teasing methods, nutrition, parasite control, pasture management, and medical history of the problem mare. The most common problem is usually persistent and or inappropriately treated uterine infections.

How it happens

Mares do not become problem mares overnight. Susceptibility to infection is a constant progression as a result of the effects of increasing age, reproductive tract damage, and bacterial damage. Bacterial challenge can be influenced by conformation, postpartum, and breeding. Bacterial contamination of the uterus is inevitable. Organisms are introduced at breeding, examinations, at parturition, and as a result of poor physical barrier (pneumovagina). When uterine defense mechanisms function properly bacterial challenges fail to produce inflammation that lasts long enough to interfere with reproduction.

Uterine defense is cellular and mechanical. Cellular responses are phargocytosis that depend on:

1. adequate numbers of neutrophils migrating through the endometrium to the lumen of the uterus;
2. chemotaxis of neutrophils to the bacteria;
3. adherence of the bacteria to the neutrophil; and

4. ingestion and killing of the bacteria by neutorophils.

Mechanical contributors to uterine defense are myometrial contractions, which aid evacuating the uterus and a relaxed cervix. Physical clearance is most efficient during estrus.

Not all causes of uterine defense mechanisms have been identified but some are well known. Perineal abnormalities and pneumovagina are undoubtedly related to a decrease in the uterine defense mechanism. Failure of the uterus to mechanically clear bacteria and inflammatory products is also important. Myometrial activity is usually reduced in older mares and physical clearance is delayed in the problem mare.

Mechanical clearance may also be impaired if the cervix does not relax properly, has adhesions, or has other functional defects.

For embryo survival, mares must clear bacteria and inflammation from the uterus by the time the embryo reaches the uterus, about 5-6 days post ovulation. In addition, inflammation in the uterus prior to breeding can be detrimental to sperm survival and motility.

Examination
A full reproductive exam is necessary to identify problems. Reproductive history with past breeding records may tell you where and why the problems began. Physical condition of the mare: overweight, underweight, long hair coat (pituitary adenoma), or chronic pain. External conformation, tipped pelvis, slope of the vaginal lips, the propensity to pool urine, and any other perineal abnormalities.

Rectal exams are used to determine uterine tone and structure, and information on ovarian cyclicity and abnormalities.

Ultrasound exams are performed to determine the quantity and quality of fluid that relates to inflammation; the presence of uterine cysts - related to age and chronic endometritis; and any other abnormalities not detected by rectal exam.

Vaginal exams – speculum exam - may identify urine pooling and are used to visualize the cervix. A manual exam may be necessary to identify cervical defects and adhesions not seen by speculum exam.

A culture and cytology are usually done at the same time and ideally when the mare is in estrus. A culture will help identify any bacterial pathogens present in the uterus. A cytology is a microscopic exam of the quantity of neutrophils in the uterus. This relates to inflammation in the uterus and can also identify yeast infections.

A Uterine biopsy may not always be totally representative of the uterus, but is one of the most accurate determinants of inflammatory conditions. Cell types and changes are graded: acute, chronic, and fibrotic; and can be very helpful in determining a mare's ability to produce a live foal.

Pre-breeding the problem mare
The problem mare should be looked at in the non-breeding season. The goal is to eliminate uterine contamination and inflammation and to prevent any further

contamination before breeding begins. Failure to treat and control a uterine infection just adds more insult to an already compromised reproductive tract. Treatments are determined by culture and cytology. Uterine infections with large amounts of fluid and debris are treated by saline lavage, usually one liter at a time until clear, followed by intra-uterine antibiotics as determined by culture and sensitivity. The pre-breeding season is also a good time to correct any physical abnormalities such as caslicks or urethral extension.

The primary goal is to have the uterine environment capable of supporting the spermatozoa long enough for them to reach the oviduct in a condition capable of fertilization. It only takes a few hours for the spermatozoa to pass through the uterus to the oviduct, however inflammatory products can cause an immediate decline in spermatozoal motility that appears to be proportional to the amount of inflammation. The problem mare should be examined early in the estrus cycle. An ultrasound exam will determine quantity and quality of fluid and in conjunction with culture and cytology will determine whether uterine lavage, local antibiotics or a combination of both is needed to clear the uterus of inflammation.

After the uterus is clear of inflammation the next goal is to prevent contamination at or immediately after breeding. It is much easier to control contamination with artificial insemination than with natural service, but both result in an introduction of bacteria. Regardless of which technique is used to breed the problem mare, if a caslick has to be opened it should be closed after breeding.

When breeding the problem mare much effort is directed toward breeding the mare only once, just prior to ovulation. The use of human chorionic gonadatropin (hCG) and deslorelin (Ovuplant) has made it much easier to time breeding and ovulation.

Post breeding management

The reason for post breeding treatments is to eliminate infection and inflammation in the uterus so it can support pregnancy and to prevent any further inflammation and contamination. Within four hours of breeding the spermatozoa are in the oviduct and they are protected from the inflammatory products of the uterus and or uterine treatments. The embryo will not reach the uterus until about six days after ovulation. An ultrasound exam is done to confirm ovulation and also to detect quality fluid in the uterus. If no fluid is present antibiotics may be infused based on culture and cytology results. This treatment may be repeated daily for 2-3 days. If fluid is present then the same treatment is applied after first lavaging the uterus with saline to help mechanically clear the uterus of inflammatory products. Oxytocin is used at the time of lavage to increase myometrial contractions and to aid in clearance of the uterus. If a caslick had to be opened for treatment it is again closed after the final treatment is completed.

If further treatment is necessary it is administered systemically. Some problem mares may be maintained on systemic antibiotics and anti-inflammatories until diagnosis of pregnancy at 12-14 days after ovulation.