

Endometritis in Mares

Inflammation of the inner uterus lining (endometrium) can cause subfertility or infertility

Overview

Endometritis is defined as an inflammation of the endometrium, which is the inner lining of the uterus. Endometritis is an important cause of reduced fertility and infertility in mares, therefore it contributes to economic losses in the equine industry.

The most common causes of endometritis in mares are nonspecific bacterial infections by uterine invasion of bacteria such as *Streptococcus zooepidemicus* or *Escherichia coli*. Other microorganisms can be involved, including bacteria such as *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Taylorella equigenitalis*, the causative agent of CEM. Yeast and fungi (e.g., *Candida* spp., *Aspergillus* spp.) can also infect the uterus resulting in an endometritis. In addition to microorganisms, semen can cause an inflammation of the uterus. This is referred to as a breeding-induced endometritis.

The normal mare uterus is protected from external contamination due to the anatomic design of the reproductive system. The vulva, vestibule, vagina, and cervix each function as physical barriers that block the passage of foreign material(s). Injury, anatomic abnormalities, or loss of function of any of these structures (e.g., post-foaling) can result in the introduction of microorganisms into the uterus and a case of endometritis. In severe or persistent cases, a chronic endometritis can develop accompanied by degenerative changes of the endometrium, including fibrosis (scarring). This condition is usually noted in older, multiparous mares (those which have foaled more than twice).

Clinical Signs

With the exception of contagious equine



The most common causes of endometritis in mares are nonspecific bacterial infections by uterine invasion of bacteria.

metritis (CEM), most mares with endometritis do not have a visible vaginal discharge. Inflammation of the endometrium is not associated with any major clinical sign other than reduced fertility, which is a hallmark of endometritis in mares. Endometritis is usually first realized because of an early return to estrus after breeding to a fertile stallion. Affected mares can also show a shortened interestrus interval. That is, they come into heat more frequently than anticipated.

Diagnosis

The veterinarian uses cytology to take a look at the types of cells that are present within the endometrium. The presence of different blood cell types indicates different kinds of inflammation or infection. A culture of endometrial fluid samples is used to help specifically identify infectious organisms, if they are present. It is very important that the veterinarian consider both cytology and culture when evaluating endometritis.

Inflammation of the uterus is best diagnosed in mares with reduced fertility by microscopic analysis of an endometrial

swab or an endometrial biopsy. Culturing samples from the cervix or uterus during estrus (heat) is also useful to identify the particular species of bacteria or other microorganism colonizing the uterus and the sensitivity of these organisms to antimicrobial drugs. The identification of one or more bacteria after culturing endometrial samples, however, is not sufficient to diagnose endometritis. A positive diagnosis of endometritis necessitates microscopic evidence of an influx of inflammatory cells (i.e., neutrophils are seen in the acute stage, usually on cytology). Endometrial biopsy might be another technique

used for evaluation of an inflammatory response—detecting a variety of inflammatory cells with fibrosis (scarring) around the endometrial glands being a common chronic sequela of inflammation.

Transrectal palpation and ultrasound examination that reveal free fluid in the uterus prior to breeding is highly suggestive of the mare's susceptibility to an endometritis. Mares with free fluid in the lumen of the uterus more than 12 hours post-breeding are thought to be affected with a mating-induced endometritis.

An endoscope can also be employed to directly visualize the uterus. This technique, referred to as hysteroscopy, can provide important information regarding the severity of the inflammation and the presence of foreign bodies, adhesions, masses, and cysts. Each of these abnormalities can adversely affect fertility.

Treatment

The goal of treatment is to remove the inciting cause and decrease uterine inflammation.

Mares diagnosed with a sexually transmitted disease require local treatment

with a cleansing solution (e.g., 4% chlorhexidine) and application of an antibiotic ointment such as nitrofurazone in combination with uterine lavage (if indicated). Best results are achieved when this process is performed during estrus.

For uterine infections associated with other microorganisms, the underlying problem is commonly related to a breakdown in the physical barriers of the reproductive tract. Thus, repairing these anatomic defects via such procedures as a Caslik's surgery (a procedure to augment closure of the vulva) is recommended. Once the underlying physical concerns have been addressed, the inflammation might resolve without further treatment. In refractory cases (cases that keep recurring), systemic or local antimicrobial drug therapy via intrauterine infusion can be implemented. Selection of the appropriate drug should be made based on culture and sensitivity results.

In mares with a post-breeding endometritis, uterine lavage with saline (with or without drugs such as oxytocin or prostaglandin F) is recommended to clear the uterus of inflammatory products and

fluid. These lavages are safely performed between six and 24 hours post-breeding.

Prognosis

Further characterization of the effect of endometritis can be obtained from endometrial biopsy. This allows examination of microscopic endometrial structure for the degree of inflammation, fibrosis (scarring) around glands, and other abnormal alterations that might affect endometrial function. A grading system is used in a semi-quantitative manner to predict ability of the endometrium to support a pregnancy to full-term. The grading system ranges from Grade 1 (normal, no significant abnormalities) to Grade 3, where there has been significant loss of endometrial glands such that the mare is unlikely to be able to support a pregnancy to full-term.

Predicted foaling rates are 80-90% in mares with grade 1 biopsies, 50-80% with grade 2A, 10-50% with grade 2B, and less than 10% in mares with grade 3 biopsy.

Horses with sexually transmitted diseases typically have a very good prognosis if treated aggressively.

FAST FACTS

- Endometritis is an inflammation of the endometrium, (inner lining of the uterus).
- **Common causes** of endometritis include bacterial infections (including sexually transmitted diseases), breeding, and chronic cases due to failure to treat or insufficient treatment of persistent endometritis.
- **Diagnosis** is achieved via culturing endometrial swabs, microscopically analyzing endometrial cytologies and biopsies, and examining the uterus via transrectal palpation, ultrasonography, or hysteroscopy.
- **Prognosis** is dependent on the underlying cause and severity of the condition.
- **Foaling rates** for mares with endometritis can range from less than 10% to 90%.

Prevention

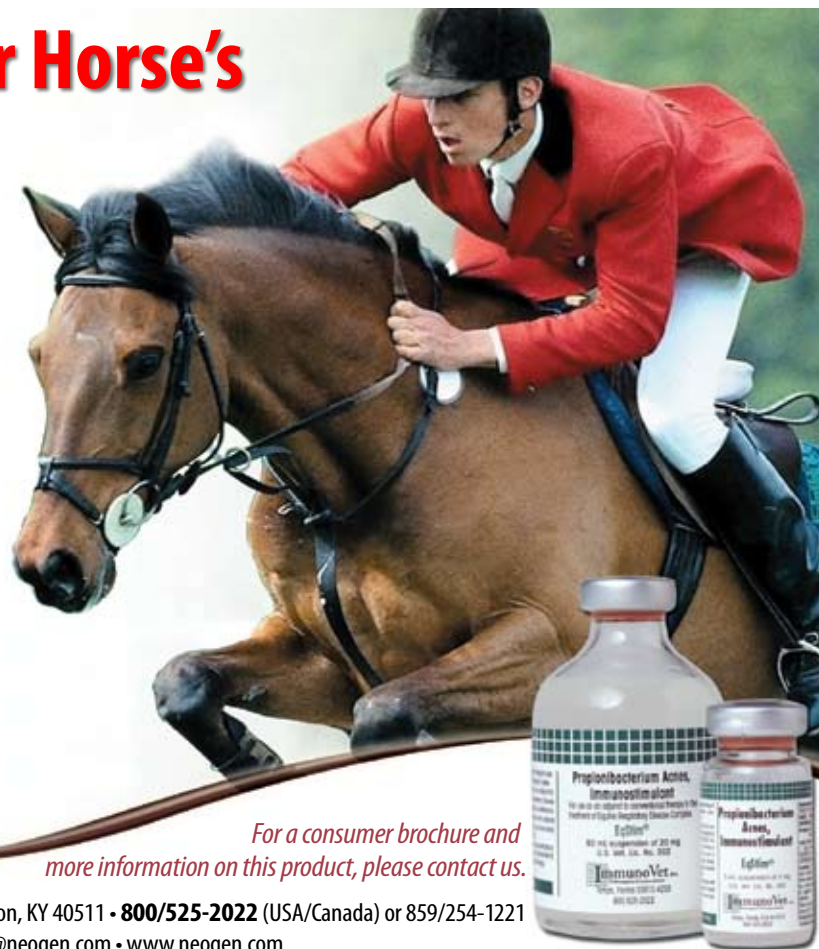
Endometritis caused by sexually transmitted diseases can be prevented by only breeding horses that are certified free of venereal diseases.

While endometritis unrelated to sexually transmitted diseases cannot necessarily be prevented, the use of available diagnostic tests and medical management of mares diagnosed with endometritis are likely to improve conception and foaling rates. 🐾

Jump Start Your Horse's Immune System with *EqStim*®

- USDA-approved immunostimulant for adjunctive treatment of equine respiratory disease complex.
- Proven to provide rapid recovery from bacterial and viral respiratory infections.
- Employs no adjuvants – safe to use in adult horses, ponies and foals.
- *Evaluated in mares diagnosed with persistent endometritis. Results of this randomized, double-blinded clinical trial were published in the *July 1, 2007 issue of JAVMA. Please contact Neogen for a complimentary reprint of this article.*

*Rohrbach, Barton W., VMD, MPH, DACVPM; Peter C. Sheerin, DVM, DACT; Charles K. Cantrell, DVM; Phillip M. Matthews, DVM; John V. Steiner, DVM, DACT; Lewis E. Dodds, DVM. "Effect of adjunctive treatment with intravenously administered *Propionibacterium acnes* on reproductive performance in mares with persistent endometritis." JAVMA July 1, 2007; 231(1): 107-113.



For a consumer brochure and more information on this product, please contact us.



944 Nandino Blvd. • Lexington, KY 40511 • **800/525-2022** (USA/Canada) or 859/254-1221
Fax 877/228-7229 • inform@neogen.com • www.neogen.com