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Diagnosis and treatment of acute endometritis

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Diagnosis of infertility problems in the mare based on samples recovered from the uterus has been used for almost a century (Schiebel 1920). This concept has over the years remained almost the same, however the specific diagnostic techniques applied to analyse the recovered samples have been further developed. The methods used for diagnosing acute endometritis today include endometrial swab, endometrial biopsy and endometrial flush, as well as using the harvested material for bacteriological, cytological and histological procedures (Nielsen 2005).

During the last decade it has become increasingly clear that acute endometritis is not only initiated by pathogens. It is widely accepted that uterine inflammation is a normal response to intruterine deposition of semen. The normal mare will clear this inflammation within 48 h post mating. The mare with compromised uterine clearance however will establish a more pathological condition including accumulation of inflammatory debris and fluid, which will persist for more than 48 h (Troedsson 1999).

Diagnostic methods and procedures

Material from the endometrium and uterine lumen can be collected in at least 3 different ways: A guarded sterile cotton swab (Brook 1984), endometrial biopsy (Nielsen 2005) and uterine flush (LeBlanc et al. 2007). Each of these 3 methods has advantages and disadvantages. The guarded swab and the uterine flush can be used for diagnosing endometritis by cytology and bacteriology whereas an endometrial biopsy can be used for diagnosis by cytology, bacteriology and histology.

Bacteriology

Presumptive identification of bacteria and yeast can be made in laboratories in most practices. In a majority of cases pathogen identification can be performed based on colony morphology following incubation on blood-agar in atmospheric air for 24 and 48 h. The sensitivity and negative predictive value of using a biopsy or an endometrial flush for bacteriology has been shown superior to the swab in several studies (Nielsen 2005; LeBlanc et al. 2007; Nielsen et al. 2010).

Cytology

Cells from the endometrial swab, biopsy or flush can be smeared on a microscope glass slide and stained. Examination by light microscopy the presence of polymorph nuclear cells (PMNs) will indicate whether an inflammatory response is present in the endometrial tissue (Nielsen 2005).

Histology

Following preparation and staining PMNs can, if present, be demonstrated in a histological slide. If PMNs are present, an ongoing inflammatory response is present in the endometrial tissue. Other histological abnormalities such as glandular structure, fibrosis and lymphatic lacunae, which are more related to chronic endometritis, will also become evident in the histological examination. The sensitivity and positive predictive value of the histological examination regarding inflammation is very high. The processing of the histological slides is however time consuming.

Fluorescent in situ hybridisation (FISH)

The presence of Streptococcus equi ssp. zooepidemicus deep in the endometrium of the chronically infected mare has recently been described (Petersen et al. 2009). Using a specific oligonucleotide attached to a fluorophore, streptococci could be visualised deep in the subepithelial tissue and in the endometrial crypts. Disadvantages of this method are the use of an expensive fluorescence microscope and the reported low sensitivity (Petersen, unpublished data).

Treatment

The single factor that has contributed most to an increase in pregnancy rates has probably been the Caslick procedure. Mares that had vulvoplasty surgery performed, had a higher pregnancy rate than mares without this procedure (Nielsen et al. 2008). The use of uterine flush with 9% saline combined with Ringer’s solution to help expel debris and inflammatory products from the uterine lumen has also been widely described. These uterine flushes are often used together with deposition of antibiotics and/or antifungal drugs in the uterine lumen. Blanchard et al. (2003) provides an extensive list of dosages of antibiotic and antifungal treatment as well as possible disinfectants for uterine use.

Treatment with ecbolics such as oxytocin is often used in conjunction with uterine flush, antibiotic treatment and after breeding, and it has become a routine tool in the treatment of acute endometritis (Madil et al. 2002).

Down-regulation of the inflammatory response by a single injection of dexamethasone at the time of breeding to susceptible mares has also been reported successful (Bucca et al. 2008).

The most inflammatory agent exposed to the uterus is often the semen itself. Management of the time of ovulation by ovulation-inducing agents is therefore often vital in the effort of reducing the inflammatory response to that of a single insemination or breeding.

References