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A clinical approach to managing the mare with placentitis

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Abstract

Placental infections in the mare are a diagnostic and therapeutic challenge. The following article will review techniques for identifying placental infections, approaches for treating placentitis, and methods for managing these mares after foaling.

Keywords: Pregnancy; Placentitis; Placental infection; Placenta; Mare

1. Introduction

Ascending placentitis in mares has generated a great deal of attention in recent years. This disease is not new to equine medicine. However, significant financial losses caused by placentitis have stimulated interest in improved diagnostic and treatment tools for affected mares. The disease, most frequently caused by an ascending bacterial infection, can be insidious in nature. Clinical signs frequently do not occur until well into the disease process; at that time, it may be difficult to salvage the pregnancy. The following review will focus on a clinical approach to diagnosing and managing mares with placentitis prior to foaling, as well as in the postpartum interval.

2. Mare profile

Anecdotally, mares suffering from ascending placentitis are multiparous and middle-aged to aged. Affected mares often have poor perineal conformation or defects. No breed predilection has been identified. At the University of Florida, Thoroughbreds are heavily represented, due to the local horse population, and an interest in breeding aged mares.

3. Clinical signs

The most common clinical presentation for the mare with placentitis is premature udder development, with or without vulvar discharge. The mammary gland of a pregnant mare develops in preparation for imminent delivery of the fetus. In the normal foaling mare, the mammary gland develops approximately 1–2 wk prior to parturition. This phenomenon is affected by parity and season. Precocious mammary gland development is most frequently attributed to twin pregnancies or placental abnormality. Although early diagnosis and management of twin pregnancies have substantially reduced the incidence of twins carried to term, twin pregnancy should always be considered a cause of precocious udder development.

Vulvar discharge is a very inconsistent clinical finding in mares with bacterial placentitis. It is likely that discharge is often present in affected mares, but it may be produced in such scant quantities that it is

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difficult to see without careful scrutiny. Furthermore, small amounts of vulvar discharge can easily be removed from the vulva by the tail.

Mares in an experimental model of placentitis more frequently had vulvar discharge than mares with field cases of placentitis. Study mares were inoculated (transcervically) with *Streptococcus equi* subspecies *zooepidemicus* and then examined every 12 h for evidence of mammary gland development or vulvar discharge. Although precocious mammary development was evident in only one of 17 infected mares, vulvar discharge was the primary clinical sign in all 17 infected mares. Factors that may have contributed to the higher incidence of vulvar discharge in experimentally infected mares include a high dose of bacterial inoculum and extremely vigilent monitoring of the perineal area. Notwithstanding, we concluded that mares ''at risk'' for bacterial placentitis should have thorough monitoring of the vulva, tail hairs, and hind legs for evidence of discharge originating from the caudal reproductive tract. In that regard, early identification of clinical signs of placentitis facilitates prompt initiation of treatment, with a potentially better pregnancy outcome.

4. Ultrasonographic tools

4.1. Transrectal ultrasonography

Transrectal ultrasonographic examination of the caudal reproductive tract has become a commonplace diagnostic tool for placentitis. This method enables direct examination of the cervical star region, the area most often afflicted with placentitis. It also allows for evaluation of fetal activity, fetal fluid character, fetal orbit measures, and subjective amniotic evaluation.

In the normal pregnant mare, the area visualized in the region of the cervical star is the combined uterine and placental (chorioallantoic) unit. Renaudin and coworkers [1,2] developed the technique for evaluation of the combined thickness of the uterus and placenta (CTUP) and established normal values in light-horse mares throughout gestation. For 271 to 300, 301 to 330, and >330 d of gestation, normal concentrations for CUTP were <8, <10, and <12 mm, respectively [2,23]. However, mares with placental infection or inflammation have increased (thicker) CTUP measures, or separation of the membranes from the endometrium. Furthermore, purulent material (hyperechoic) may accumulate in pockets between the chorioallantois and the endometrium. Thickening of the amnion may also indicate inflammation.

Allantoic fluid throughout most of gestation is hypoechoic (black), whereas amniotic fluid is slightly more echodense (light gray). However, fetal activity can agitate cellular material and change the characteristics of either fluid compartment. Fluids that persistently have increased echodensity likely have increased cellularity due to infection or inflammation. Serial ultrasound examinations are essential to determine if fluid character changes are iatrogenic or pathologic.

4.2. Transabdominal ultrasonography

Transabdominal ultrasonography is an excellent tool for evaluating the fetus and placenta in mares [3–5]. Fetal well-being can be assessed with transabdominal ultrasonographic assessment of fetal heart rate, tone, activity, and size. Locating a fetus (es) is most easily achieved by identifying the fetal thorax; it is visualized as several linear, hypoechoic shadows (intercostal spaces), interdigitated with linear, hyperechoic ribs. The active fetal heart is easily identified at the cranial-most aspect of the fetal thorax (the end that narrows into the cervical spine). The average heart rate in a fetus at >300 d gestation is 75 ± 7 bpm [3]. Fetal heart rate slows by approximately 10 bpm at >330 d gestation, but can vary with activity levels. Consistently low or high fetal heart rates are indicative of fetal stress.

Placental membrane integrity and thickness and fetal fluid character are also evaluated using this technique. Again, the chorioallantois is intimately associated with the endometrium and cannot be easily identified as a separate structure from the transabdominal approach. Mares with normal pregnancies should have a minimum CTUP of 7.1 ± 1.6 mm, and a maximal CTUP of 11.5 ± 2.4 mm [3]. Evaluation of the caudal allantochorion is not accurate using the transabdominal approach. However, transabdominal evaluation of fetal membranes is very useful for identifying placental abnormalities in mares with hematogenously-induced or nocardia-form placentitis. Mares infected with the nocardia-form bacteria will often have placental separation and purulent material at the base of the gravid horn and the junction of the uterine body [6].

Transabdominal ultrasonography is the most accurate method to diagnose twins in late gestation. Confirmation of twins is generally made by identifying two fetal thoraces, and/or beating hearts. Measurements of fetal thoraces can be used to confirm the presence of twins, if thoracic size differs between fetuses. Additionally, the orientation of the thorax can be used to verify the presence of twin fetuses.