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A Review of the Many Faces of Placentitis

Late-term abortions—those that occur between Days 210 and 300 of gestation—due to placentitis (inflammation of the placenta) can wreak both economical and emotional havoc on mare owners. Therefore, it's important that veterinarians understand the various causes of and treatment options for placentitis.

Igor Canisso, DVM, MSc, PhD, Dipl. ACT, Dipl. DECAR (European College of Animal Reproduction), reviewed key features of placentitis and offered real-life field diagnosis and treatment options to "abort abortion" during the 2015 American Association of Equine Practitioners Convention, held Dec. 5-9 in Las Vegas.

Canisso conducted his placentitis research while at the University of Kentucky's Gluck Equine Research Center, in Lexington, and he now works in the Department of Veterinary Clinical Medicine at The University of Illinois Urbana-Champaign's College of Veterinary Medicine.

"Approximately 3-5% of Thoroughbred mares suffer late-term pregnancies due to placentitis, making placentitis the leading cause of late-term abortion," he said.

The Jockey Club estimates that the annual Thoroughbred foal crop hovers around the 20,000 mark, which means approximately 600 to 1,000 Thoroughbred mares suffer late-term abortion each year.

During his presentation, Canisso described the four types of placentitis: ascending, nocardioform, diffuse (hematogenous), and multifocal.

"Ascending placentitis, resulting from infectious agents entering the uterus from the vagina and cervix and colonizing the caudal (back) pole of the chorioallantois, or cervical star, is the most common type," Canisso said. "Approximately 90% of cases are bacterial, primarily caused by Streptococcus equi subspecies zooepidemicus; however, mixed infections with a secondary fungal infection can also develop."

Ascending placental infection can spread directly to the foal via the umbilical cord. Infection also results in the production of prostaglandins and pro-inflammatory interleukins that cause placental insufficiency and retard intra-uterine growth. Researchers believe placentitis causes premature development of the fetal hypothalamic-pituitary-adrenal axis (an important component of the neuroendocrine system that controls or regulates many body processes), resulting in premature births around 310 days of gestation, instead of around the usual 342-day mark.

Nocardioform placentitis is also typically caused by bacteria, usually the Gram-positive *Crossiella equi* and *Amycolatopsis* spp. Uterine lesions are located primarily in the uterine body and at the base of the uterine horns and do not usually involve the cervical star. Research that Canisso and colleagues conducted involving the administration of *Crossiella equi* to mares (e.g., into the uterus), however, did not induce nocardioform placentitis.

"These results suggest that nocardioform placentitis is not simply induced by the presence of nocardioform microorganisms," said Canisso. "Some other unidentified factor might be involved."

Moving on to the remaining placentitis types, Canisso said, "Little is known about the pathogenesis (mechanism leading to infection) of either diffuse or multifocal placentitis. Diffuse placentitis is often diagnosed in association with either bacteria or fungi, including Leptospira spp."

Researchers believe Leptospira is the most important cause of diffuse placentitis causing abortion by directly infecting the fetoplacental unit. As with ascending placentitis, inflammation and prostaglandin production likely play a role in either premature birth or abortion.

"Depending on the type of placentitis, mares may present with premature bag development and a vulvar discharge," said Canisso. "Alternatively, none of those signs are obvious before abortion."

Together with the classical clinical signs of placentitis, such as vaginal discharge and premature filling of the udder, lesions detectable on ultrasonography are also important for making a firm diagnosis of placentitis. The combined thickness of the uterus and placenta is also a valuable tool for identifying affected mares.

When placentitis is diagnosed early, it's possible to "baby" many affected mares through the remainder of their pregnancies with medical management.

"The three main goals are to control infection of the placenta and fetus; maintain quiescence (inactivity) of the muscular layers of the uterus called the myometrium; and block the production of pro -inflammatory molecules like interleukins," said Canisso.

Veterinarians can potentially achieve these goals using a combination of antibiotics, anti-inflammatory drugs (corticosteroids or pentoxifylline), and altrenogest (an anti-contraction medication used to stop labor).

Some foals are born septic or otherwise compromised to mares with placentitis, but this isn't necessarily always the case. Canisso wrapped up by describing a study in which racing records of foals born to Thoroughbred mares with a history of successfully treated placentitis were compared to those born to mares without placentitis. The foals were no different in terms of number of starts, wins/ places/shows, and 2-year-old earnings.