Signalment: 5.5 month gestation female equine fetus

History: At day 68 of gestation (September) an 18 year old Quarter horse mare had an elevated temperature, heart rate, respiratory rate, and gastrointestinal motility. Based on clinical findings, season of year, and geographic area, a tentative diagnosis of Potomac horse fever (PHF) was made. This diagnosis was confirmed by serology (titer ≥1:2560) and polymerase chain reaction (PCR) on whole blood taken prior to antibiotic therapy. There was good response to treatment and the mare never had diarrhea. The fetus was evaluated at day 71 of pregnancy and no abnormalities were detected. The mare received Pneumabort vaccine (equine herpesvirus 1) at 3 and 5 months gestation. The mare remained clinically normal until spontaneous abortion at day 166 of gestation. The placenta was retained, but was freed after saline lavage, oxytocin, and gentle manipulation.

Gross findings: A female equine fetus weighing 4.4kg and a placenta weighing 1.46kg were submitted. There were holes in the body suggesting postmortem scavenging; the right ovary was absent. The liver was mottled light and dark brown and weighed 450g (10% of body weight). The heart weighed 34g (0.77% of body weight) and had epicardial petechiae.
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Microscopic Findings: There was diffuse lymphohistiocytic inflammation in the cecum, colon, mesenteric lymph nodes, thymus, and liver. Less severe inflammation was present in the myocardium, lung, stomach, small intestine, urinary bladder, and perirenal adipose tissue. The inflammation was diffuse in the large intestinal mucosa and submucosa, accompanied by lymphoid hyperplasia and necrosis (karyorrhexis) in the mesenteric lymph nodes, and perivascular in other tissues. The placenta, umbilicus, brain, kidney, pancreas, pituitary, adrenal, thyroid, salivary gland, tongue, uterus, eye, and skin had no significant lesions.

Diagnosis: Lymphohistiocytic typhlocolitis, hepatitis, myocarditis, and mesenteric lymphadenitis
Discussion:

In an aborted equine fetus the combination of lymphohistiocytic typhlocolitis, hepatitis, myocarditis, and mesenteric lymphadenitis suggests fetal infection with Neorickettsia (formerly Ehrlichia) risticii, the etiologic agent of Potomac horse fever. These lesions have been described previously in aborted fetuses from naturally infected horses and experimentally infected ponies. Placental lesions were absent in the current case and only mild in the previous experimental cases reported.

In this case, real-time PCR to detect N. risticii DNA in formalin-fixed fetal lymph node, liver, colon, and thymus was positive. To confirm the real-time PCR results, the PCR products were sequenced and compared to published sequences. The 60 nucleotide PCR product showed 100% sequence identity to the 16S ribosomal RNA gene of E. risticii.

Potomac horse fever occurs throughout the United States and has been reported in South America, Europe, and Canada. It most commonly manifests as colitis with or without fever, anorexia, depression, diarrhea, ileus, and/or colic. Laminitis may occur in up to 40% of cases. Abortion has also been established as a consequence of infection, occurring in 6 of 11 (55%) experimentally infected mares in one study. However, this sequela has received less attention, perhaps because it occurs much later (average 80 ± 19 days after the initial colitis), after the mare returns to seemingly normal health.

Serological studies demonstrate a definite seasonality, with increased prevalence of disease occurring from July to September. With current breeding practices, this peak is likely to occur in the late first or early second trimester, coinciding with the stage of gestation (90–180 days) during which experimental and natural infection results in abortion. It follows that PHF could potentially cause significant fetal loss, especially as prevalence of the disease seems to be increasing.

References: