Case Report

Pregnancy termination in a mare with hydroallantois*

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Abstract

We describe the successful management, resolution, and subsequent return to breeding of a mare with hydroallantois. A 14-year, American Quarter Horse mare in late pregnancy was referred for marked abdominal distention with a history of treatment for placentitis. Physical examination findings were consistent with hydroallantois. It was decided to terminate pregnancy. During fetal delivery, dystocia was diagnosed and corrected under field anesthesia; recovery was uneventful. Mare conceived the following season and delivered a healthy filly.

Keywords: Hydroallantois, mare, termination of pregnancy

Background

Hydroallantois is a rare condition characterized by a sudden increase in allantoic fluid volume leading to marked abdominal distention, typically between 6-10 months of pregnancy. It occurs quickly over several days, with few to no notable abnormalities preceding its onset.[1] Initial signs typically include dramatic increase in abdominal distention, reduced locomotion, difficulty feeding, dyspnea, and obvious discomfort.[1,2] The condition is considered a serious threat to mare and foal;[1] without intervention, it can seriously impact mare's reproductive future.

Diagnosis is made by transrectal palpation of the markedly distended fluid-filled uterus, combined with an inability to visualize the fetus on ultrasonography.[3] In some cases, fluid excess of up to 100 liters has been reported.[1] Although the fetus is often developmentally normal, survival to term and successful delivery depends on the mare's ability to support the pregnancy to the point of viability.[2-4] Therefore, probability of a live foal depends mostly on the interval from onset of symptoms to term. Pregnancy termination is often elected to protect the mare's future reproductive health.[1,4,5]

Case presentation

A 14-year, American Quarter Horse mare was presented on day 301 of pregnancy with abdominal distention (Figures 1 and 2) and a history of treatment for placentitis. Mare had a history of 5 full-term pregnancies; all were conceived via live cover and with no notable complications for the duration of pregnancy. The first 4 pregnancies resulted in live foals. The fifth was stillborn; it had an intact amniotic sac and visually normal fetal membranes. All deliveries were unassisted. Mare was reportedly up to date on vaccinations (including Pneumabort) and had a Caslicks on presentation.

Mare was initially examined by the referring veterinarian on day 284 of pregnancy, after owner noticed premature lactation. Mare received twice daily oral trimethoprim-sulfamethoxazole (30 mg/kg; Amneal Pharmaceutical Bridgewater, NJ), metronidazole (20 mg/kg; UniChem Pharmaceuticals Inc, New Brunswick, NJ), and once daily oral firocoxib (0.1 mg/kg; Equioxx®, Boehringer Ingelheim, St. Joseph, MO) at home the night before. Referring veterinarian felt a slightly thickened placenta with a combined uterus and placenta measurement of 15 mm. Medications were continued, and once daily oral altrenogest (0.044 mg/kg; Regu-Mate®, Merck Animal Health, Intervet Canada, Kirkland, QC, Canada) was added. Mare was reexamined by the referring veterinarian on day 300; size of mare's abdomen had increased dramatically, with notable distention. Placenta was within normal limits, but due to the change in fluid volume a decision was made to refer. All medications were continued until arrival at the hospital.

On physical examination, mare was bright and alert. Transrectal palpation and ultrasonography revealed the uterus to be above the pelvic brim with allantoic fluid at a greater volume than normal. Fetus could not be visualized with

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Figure 1. Marked distention of the abdomen (lateral view) at presentation

Figure 2. Marked distention of the abdomen (frontal view) at presentation

ultrasonography. Due to the length of pregnancy remaining and concern over mare's future fertility, it was decided to terminate the pregnancy.

Bloodwork on admission had creatinine kinase and calcium values within reference range, indicating the immediate lower risk of prepubic tendon rupture. Because the mare was presented on a Friday afternoon, mare was kept for 2 days prior to induction to have full staff availability during the procedure. Mare was monitored closely during this time; condition remained stable for the duration.

Treatment

An intravenous catheter was placed; 1 liter of lactated Ringer's solution (LRS, Dechra Veterinary Products, Overland Park, KS) was given, and heart rate was monitored throughout the procedure. Caslicks was removed and a sterile 21-inch CH18 Foley catheter was inserted through the cervix into allantois; over a period of 2½ hours a total volume of 45.4 liters of allantoic fluid was drained (Figure 3). After drainage, parturition was induced

Figure 3. Draining allantoic fluid

with 60 units of intravenous oxytocin (Bimeda-MTC Animal Health, Cambridge, ON, Canada) in 1 liter of 0.9% NaCl solution (Dechra) given over 60 minutes. At 45 minutes fetal front limbs appeared in the birth canal; 10 minutes later hind limbs were felt near the right shoulder, indicating malposture. Palpation revealed fetus in anterior presentation, with the left hind limb extended and the right hind limb crossing over the left hindlimb; both were extended beneath the fetus ('dogsitting' posture). Intravenous detomidine (0.02 mg/kg; Dormosedan®, Zoetis, Parsipanny, NJ) and ketamine (1.5 mg/kg; Ketaset®, Zoetis) were given to anesthetize the mare, along with 240 mg buscopan (0.35 mg/kg; Boehringer Ingelheim) to facilitate repositioning and delivery of the fetus; foal was stillborn (4-6 weeks premature). Mare was given an additional liter of intravenous LRS during recovery, followed by intravenous flunixin (1.1 mg/kg; Merck) and oral sulfathiamethoxine (2 mg/kg) ~ 2 hours after procedure. Mare did not experience hypovolemic shock and expelled fetal membranes 3 hours after recovery.

Outcome

Mare recovered uneventfully; rest for at least 2 estrous cycles and a breeding soundness examination prior to breeding were recommended. Referring veterinarian observed (transrectal ultrasonography) residual intrauterine fluid 2 weeks after discharge and antibiotic treatment was extended. Mare's uterus was normal at the next appointment. Owner made a decision not to breed the mare until the next season due to an unrelated tendon injury.

The following year, mare was bred via artificial insemination on a natural cycle, and the following spring delivered a healthy,

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Figure 4. Filly delivered after uneventful pregnancy the following year

live foal at full-term (Figure 4) after a medically normal and uncomplicated pregnancy.

Discussion

The full pathophysiology of hydroallantois remains poorly understood, although it is suspected to occur in cases of compromised placental function.[2,4,5] However, placentitis is not predictive of hydrops, as there are more common etiologies.[6] Therefore, although placentitis often precedes a diagnosis of hydroallantois, identification of placentitis is not commonly the point at which hydroallantois is selected as a primary differential. Contributing genetic and epigenetic factors have also been suggested.[4] Although findings of concurrent placentitis are not consistent,[2] suspected placentitis and subsequent treatment were present in this mare's recent medical history.

At a rate of 10:1,[1] hydroallantois is the more common form of hydrops in the mare compared to hydramnios. Diagnostically, it may be differentiated by a more rapid rate of abdominal distention (typically in days), substantially higher volume of fluid (sometimes in excess of 100 liters), and increased inability to visualize the fetus on transabdominal and transrectal ultrasonography (although possible in both conditions). Gross fetal deformities of the face and head are characteristic of hydramnios, and although fluid volumes of up to 50 liters have been reported, lesser amounts are more common and tend to accumulate over a longer interval.[3] It is understood to be a disorder of fluid dynamics due to fetal inability to cycle amniotic fluid, compared to hydroallantois which is a primary dysfunction of the placenta and movement of allantoic fluid.[1]

Although there are reports of hydrops pregnancies resulting in live foals,[2,4] most cases resulted in foals that were either stillborn or euthanized soon after parturition.[4,5] Furthermore, dysmaturity and severe fetal abnormalities were identified;[7] foals born alive received substantial medical support and intervention.[4] In contrast, prognosis for the mare is generally good with prompt and appropriate intervention. Unattended hydroallantois can quickly lead to herniation of the ventral abdominal musculature, prepubic tendon rupture,[8] or eventual uterine rupture.[1] Given poor prognosis to mare and fetus, termination of pregnancy is commonly elected.

The single most important factor in fetal viability appears to be the interval remaining to term when signs develop.[1] Overall prognosis for live delivery and survival of the foal is guarded to poor,[2] and generally limited to mares that present after 330 days of pregnancy. These cases typically represent relatively low fluid volumes and often involve controlled partial drainage of the allantoic fluid.[1,2] Regardless of desired outcome or stage of pregnancy, a controlled delivery is important, as hypovolemic shock is well documented in mares after expulsion of fetal membranes.[1] Given the early stage of pregnancy and large volume of fluid in the present case, the likelihood of maintaining pregnancy to term was determined to be neither probable nor rewarding.

In this case, fetal malposture complicated delivery of the fetus, necessitating anesthesia of the mare and manual repositioning of the fetus; thereafter, delivery and recovery were uneventful. Fluids were given and an intravenous port was maintained for the procedure duration.

Similar to this case, a majority of mares conceived and had normal pregnancy after hydroallantois.[1-5,7] Although the mare was deemed sound for breeding later in the same season, breeding was delayed for treatment of an incidental tendon sheath injury.

Learning points

- Hydroallantois is a rare but serious complication of equine pregnancy. Although full pathogenesis is unknown, it is closely correlated to placental dysfunction, and often identified in cases that have been treated for placentitis.
- Quick and effective intervention carries a favorable prognosis for the mare and full return to breeding soundness is expected.
- Prognosis for fetal viability is guarded to poor, heavily dependent on case presentation, and attempts to manage a hydrops pregnancy carry significant risks for the mare.

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Conflict of interest

The authors report no conflict of interest.

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