Vaginal prolapse in an American Quarter Horse mare

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Abstract

A 15 year old, multiparous, American Quarter Horse mare in late pregnancy, was presented for a mass protruding from the vagina that was noticed 12 hours ago. Physical examination revealed a large, 25 x 12.5 x 12.5 cm, pink to red vaginal protrusion with moderate amounts of mucoid discharge. On transrectal palpation, it was evident that the mare was carrying a live fetus. Reminder of the physical examination was unremarkable. Vaginal prolapse was diagnosed that was manually reduced and an episioplasty procedure was performed. Mare was discharged with instructions to be monitored closely for 14 days and then re-evaluated, unless there were signs of impending parturition. Owner was instructed to seek immediate veterinary care if signs of parturition were noted. Foaling occurred without the knowledge of the owner, resulting in labial tear. Mare and a premature foal were presented at the hospital. Foal died during treatment. Mare was euthanized months later due to unrelated lameness. To authors' knowledge, this is the first case report of a vaginal prolapse in a mare.

Keywords: Mare, vaginal prolapse, episioplasty

Background

A multiparous, American Quarter Horse mare in late pregnancy was presented for a mass protruding from the vagina. Mare was bred naturally the previous summer. Based on breeding dates, the mare was 340 days in pregnancy and foaling was anticipated in 31 days. Mare had multiple normal pregnancies and foalings in the past 10 years. Mare was housed on pasture, was up to date on vaccinations, and had received routine anthelmintics.

Case presentation

Mare was mildly unconfortable with no evidence of active straining. Mare had a temperature of 37.1 °C, a pulse of 60 beats/minute, and a respiratory rate of 20 breaths/minute. Mucous membranes were pink and moist and all peripheral lymph nodes were within normal limits. Mammary glands appeared enlarged, with slightly larger right gland, and waxing of teats was noticed. Gut sounds and digital pulses were within normal limits. Left front fetlock appeared broken forward at a steep angle, and the margin of the hoof was irregular, with longer medial aspect. Mare had adequate flesh with a body condition score of 5/9, weighing ~ 500 kg. Normal urination and defecation were noticed after physical examination.

Transrectal palpation revealed the presence of a live normally positioned fetus. Due to late pregnancy with appreciable fetal movement, ultrasonography was not performed. Examination of the perineal area revealed the presence of a large pink to red colored mass of apparent vaginal tissue protruding from the vulva (Figure). There was moderate amount of mucoid discharge without apparent changes to the cervix. Mare's hindquarters and perineum appeared relaxed and normal. After a thorough digital examination and further inspection of the protruding tissue and adjacent structures, vaginal prolapse without cervical involvement, was diagnosed

Treatment

Mare was restrained in stocks and was given intravenously 200 mg of xylazine and 10 mg of acepromazine. Vaginal tissue and surrounding perineal region were thoroughly cleaned using dilute betadine solution, cotton, and warm water. Vaginal tissue was manually reduced using gentle pressure and manipulation. Nitrofurazone ointment was liberally applied to vaginal tissue and labia. After reduction of the prolapsed tissue, episioplasty was performed to reduce vulvar opening length.[1]

Labial tissue was desensitized with 20 ml of 2% lidocaine, given subcutaneously near the mucocutaneous junction starting at the dorsal commissure and extending ventrally ~ 3 - 5 cm. Mucocutaneous junction of labia was incised, using a # 10 scalpel blade, starting at the dorsal commissure and extending ventrally until ~ 1 - 2 cm below the ischiatic arch,[1] and labial tissue was not removed. After incision, a modified vertical mattress suture pattern (modified Caslick's) was performed using catgut # 1 absorbable suture to oppose labial edges to minimize recurrence of vaginal prolapse.[1,2] Mare was given intravenously

Figure. Gross image of vaginal prolapse

1.1 mg/kg of flunixin meglumine for pain and inflammation. Additionally, 2 liters of mineral oil and 1 liter of water were given via a nasogastric tube as a laxative. Mare was treated orally with trimethoprim and sulfamethoxazole tablets (32 mg/kg, every 12 hours for 14 days) to prevent ascending placentitis.

Outcome

Mare was scheduled for 14 days re-examination, suture removal, and for possible episiotomy. Four days prior to scheduled examination, mare foaled in the night without owner's presence and placenta was not found. Mare and foal were immediately transported to the hospital. Mare had a temperature of 37.8 °C, a pulse of 60 beats/minute, and a respiratory rate of 28 breaths/minute. Abdominal gut sounds and digital pulses were within normal limits and mare's body condition score was 5/9. Softness of hindquarters suggested recent foaling. Mammary gland appeared enlarged with waxing of teats with no secretions. Due to foal's condition, colostrum was not collected. Mare had a tear involving the dorsal two-thirds of right labia. Vaginal tissue appeared normal with no evidence of prolapse. Sutures were intact and the labial tear was repaired by reconstruction with suture (catgut # 1) applied in an interrupted suture pattern after routine surgical preparation and local infusion of lidocaine.

A laterally recumbent filly foal was presented. Foal was hypovolemic, hypothermic, and hypoglycemic. Foal appeared premature with a silky hair coat, bulging forehead, limb laxity, poor muscle tone, and floppy/curled ears. Complete blood count revealed leukopenia with moderate neutrophilia and lymphopenia. A bear hugger was used to correct hypothermia and the foal was given intravenously isotonic crystalloid fluids with dextrose. Plasma transfusion was later given and throughout treatment her respiratory rate was fluctuant. Foal experienced multiple episodes of regurgitation and it was elected to pass a nasogastric tube. Shortly after an indwelling nasogastric tube was placed, foal experienced respiratory arrest, became agonal and died. Necropsy suggested fetal/neonatal sepsis secondary to ascending placentitis.

Mare was kept in hospital for a night. Post foaling vaginal examination or culture were not performed to allow healing of reduced prolapsed tissue. Mare was continued on oral trimethoprim and sulfamethoxazole (32 mg/kg every 12 hours) for an additional 7 days. Mare had normal defecation and urination through the night with normal intake of water and was discharged the next day.

Discussion

Vaginal prolapse has been documented in cattle, goats, sheep, camels, dogs, cats, and women.[1-16] To authors' knowledge, it has not been reported in mares. A mare had cervical hyperplasia and mass that led to vaginal protrusion.[17] A vaginocervical prolapse was reported in a nonpregnant mare.[18] The present case had a true vaginal prolapse. Possible etiologies for this condition in mares include: increased abdominal pressure in late pregnancy leading to increased straining, abnormal changes in hormone concentrations, or weakened tissue from previous pregnancies. In this case, the exact etiopathogenesis is unknown. Combination of vaginal tissue laxity and concurrent increased abdominal pressure experienced due to late pregnancy might have contributed to this condition. Mare had no history of urinary problems or gastrointestinal irregularities. There were also no physical evidence or history of urine scalding, loose stool, or abnormal conformation that would cause the mare to

have a pneumovagina. Differential diagnoses for this condition include: uterine and urinary bladder prolapses, and vaginal, cervical and vulvar masses.

Numerous factors in other species were implicated in contributing to vaginal prolapse. Imbalance of hormonal concentrations such as lower progesterone with higher estrogen in dogs have been observed to cause vaginal hyperplasia and subsequent prolapse.[3,5] Superstimulation of ovaries using follicle stimulating hormone might lead to vaginal prolapse in sheep and cattle.[4,6] In ruminants, concentrations of calcium and phosphorus imbalances, poorly digestible roughage, extreme cold weather, and internal gastrointestinal parasites (increases in abdominal pressure) can predispose to vaginal prolapse.[4,6] Other factors include, excess perivaginal fat, prior perivaginal tissue injury, poor conformation, and incompetence of the constrictor vestibule or vulvae musculature.[4,6,8,9] Vaginal prolapse most commonly occurs in multiparous women among the ages of 40 - 70.[7-9] In most species, it occurs during the last few weeks of pregnancy when intraabdominal pressure is maximum.[6] A hereditary component has also been suggested in cattle and sheep.[1,4,6]

Treatment of vaginal prolapse varies among species. In smaller companion species (dogs and cats), ovariohysterectomy or ovariectomy was suggested to remove the effect of ovarian hormones.[3,5] In livestock species, affected animals can be treated with a temporary fixation method such as a Buhner's suture or bootlace stitch, prolapse pins, or an ewe savor as used in ewes and does. It is also recommended that livestock be culled after parturition due to the hereditary component of the condition and the probability of reoccurrence.[1] Some owners elect to cull prior to parturition due to case management. If elected to cull after parturition, the animal must be monitored closely multiple times a day to determine whether the temporary fixation needs removal to prevent peripartum complications.

Due to the possibility of reoccurrence and the potential hereditary component, we recommended no future breedings for this mare. Although this mare was placed on antibiotics after vaginal prolapse reduction, she delivered a septic foal likely as a result of ascending infection due to cervical and vaginal exposure, although the cervix appeared normal on presentation. Daily monitoring for ascending placentitis might have been beneficial. It is also not known whether existing placentitis predisposed this mare to vaginal prolapse. Uterine ultrasongraphy could have helped to rule out placentitis. Additionally, after treatment, daily ultrasonography, determination of serum progesterone and estrone sulfate concentrations, and calcium concentrations in mammary secretions could have been used to monitor for ascending placentitis. However, hospitalization and daily monitoring was not a practical economic option for the client. For mares with ascending placentitis, a multi-modal approach is typically required to control infection, inflammation and to promote uterine quiescence. Management options for such an approach include: induction of parturition to deliver the foal from the infectious environment, tocolytics to suppress labor, progestogens, pentoxyfyline, and antiprostaglandin treatment. In retrospect, at discharge from the hospital after episioplasty procedure, we could have emphasized the importance of frequent observation of the mare for signs of parturition and for vulvar discharge. Mare was euthanized months later due to unrelated lameness issue.

Learning points

- Multiparous mares are at low risk of developing vaginal prolapse.
- Vaginal prolapse should be included in differential diagnoses for a mare in late pregnancy presented with tissue protruding through the labia.
- To prevent peripartum complications, client education is important after episioplasty procedure in a late pregnant mare.
- If mare is not hospitalized, client is expected to monitor the mare frequently for signs of parturition and for vulvar discharge.

Conflict of interest

No conflict of interest to declare.

References

1. Braun W: Periparturient infections and structural abnormalities, In: Youngquist RS, Threlfall WR: editors. Current Therapy in Large Animal Theriogenology. 2nd Edition, Philadelphia; Elsevier Saunders: 1986. p. 572-574.
2. Hopper RM: Surgical Correction of abnormalities of genital organs of cows. In: Youngquist RS, Threlfall WR: editors. Current Therapy in Large Animal Theriogenology. 2nd Edition, Philadelphia; Elsevier Saunders: 1986. p. 463-472.
3. Darbaz I, Ergene O, Canooglu E, et al: The assessment of diagnostic and ultrasonographic findings in a bitch with true vaginal prolapse. Kafkas Universitesi Veteriner Fakultesi Dergisi Journal: 2017;23:843-846.
4. Munibullah, Zulqarnain, Ghaffar A, et al: Rectal and vaginal prolapse in sheep: a case report. FUUAST J Biol 2019;9:171-173.
5. Antonov A, Karadaev M: A rare case of true vaginal prolapse in a bitch after abortion due to hypoluteoidism. Bulgarian J of Vet Med 2019; 22:501-505.
6. Borakhatariya D, Gadara A, Kasundra A: Surgical management of recurrent cervico-vaginal prolapse by ovario-hysterectomy in stray cows: A report of 12 cases. Indian J Vet Sci Biotech 2017;12:146-149.
7. Shrestha R, Singh A, Pradhan B, et al: Five years audit on vaginal hysterectomy for utero vaginal prolapse. J Inst of Med 2018;40:70-74.
8. Nkwabong E, Fomulu JN: Urethrovaginal fistula following vaginal prolapse of a pedunculated uterine myoma: a case report. J Med Case Reports 2017;11:292.
9. Calvert H, Kapurubandara S, Nikam Y, et al: A vaginal Angiomyofibroblastoma as a rare cause of a prolapsing vaginal mass: a case report and review of literature. Case Rep Obs Gyn 2018;8579026: 1-5.
10. Senger PL: Pathways to Pregnancy and Parturition 2nd Edition. Idaho; Current Conceptions: 2005. p.10-40.
11. Lakshmikantan U, Murugan M, Ganesan A, et al: Surgical management of perineal laceration in a cow affected with cervico vaginal

prolapse. Indian J Anim Res 2018;52:934-935.
12. Oo ZM, NayZar M, Soe AT, et al: Surgical treatment of a cervico-vaginal prolapse in an elephant in Myanmar. Gajah 2016;44:36-39.
13. Nayak S, Samantara S: Surgical correction of chronic cervico-vaginal prolapse in a Red Sindhi cow through intravaginal approach. Vet World 2010;3:427-428.
14. Minchev P: The use of a new surgical method in eversion and prolapse of vagina in animals. J Am Vet Med Assoc 1957;130:344
15. Winkler JK: Repair of the bovine vagina prolapse by cervical fixation. J Am Vet Med Assoc 1966;149:768.
16. Miesner MD, Anderson DE: Management of uterine and vaginal prolapse in the bovine. Vet Clin Food Anim 2008;24:409-419.
17. Riera FL, Hinrichs K, Hunt PR, et al: Cervical hyperplasia with prolapse in a mare. J Am Vet Med Assoc 1989;195:1393-1394.
18. Richardson GF, Honey PG, Karns PA, et al: Vaginocervical prolapse in a mare. Vet Med Small Anim Clin 1983;78:398-401.
19. Wilborn RR, Pugh DG: Donkey reproduction. In: McKinnon AO, Squires EL, Vaala WE: editors. Equine Reproduction, 2nd Edition. Ames; Wiley-Blackwell: 2011. p. 2837.