Case Report

Animal Reproduction Update

Year 2024, Volume-4, Issue-2 (July - December)

www.acspublisher.com

A Rare Case of Congenital Anomalies of Hydrocephalus, Cystic Cephalus, Microphthalmia and Cleft Lip on Foetus – A Case Report

Arunpandian J[1], Rama Selvam C[1], Neeraj Srivastava[2*]

[1]Department of Animal Husbandry, Tamil Nadu, [2]Division of Animal Reproduction, ICAR-Indian Veterinary Research Institute, Izatnagar-243122

ARTICLE INFO

Key Words: Cleft lip, cystic cephalus, hydrocephalus, microphthalmia

doi: 10.48165/aru.2023.4.2.4

ABSTRACT

The Nettur veterinary dispensary in Tenkasi district received a 6-year-old Holstein Friesian cross-breed cattle. The owner of the cattle reported straining the animal for 4 hours from morning onwards, during which they noticed a serosanguinous mucoid discharge from the vulva. A vaginal examination revealed a completely dilated cervix and a presentation of the fetus head filled with fluid in-between both hind limbs. We punctured the foetus head with a BP blade to relieve the dystocia, then drained out the accumulated fluid. Next, we applied an obstetrical long eye hook to the eye and a snare to the forelimbs to expel the etus. We administered the fluid therapy, antibiotics, and anti-inflammatory medications for five days.

Introduction

Dystocia due to the hydrocephalus monster is a common condition in cattle (Purohit et al., 2006; Yadav, 2008), and it occurs due to the accumulation of cerebrospinal fluid in the ventricles of the brain and subarachnoid space (Noakes, 2009). In prenatal life, nutritional, environmental, and genetic factors may cause the condition to develop. When a foetus is growing, a blockage in the free flow of cerebrospinal fluid (CSF) into the arachnoid space leads to the cranial cavity getting too big (Salunke et al., 2001). Hydrocephalus is of two types: the communicating type and the non-communicating type. In the communicating type, the CSF will accumulate in the subarachnoid space due to impaired absorption (Roberts, 1986). Non-communicating types are caused by the occlusion of interventricular canals (Malik et al., 2017). Microphthalmia is an abnormally small globe that occurs due to various aetiologies, such as vitamin A deficiency in the dam, intrauterine bovine virus diarrhea, mucosal disease infection, and hereditary aetiology (Mason et al., 2003; Hur et al., 2008).

Case history and clinical observation

The veterinarian reported that the six-year-old, third-parity animal was in full-term gestation. Additionally, the veterinarian observed symptoms such as prolonged straining (for 4 h) in the morning, inability to expel the foetus, and serosanguinous mucoid discharge from the vulva. The general clinical examination revealed a mildly elevated temperature, moderate dehydration, and a normal heart and respiratory rate. The vaginal examination revealed a

*Corresponding author.
E-mail address: sangee15@gmail.com (Neeraj Srivastava)
Received 20.06.2024; Accepted 02.08.2024

moderately congested but moist vaginal mucous membrane, as well as a fully dilated cervix. The foetus head presented anteriorly and longitudinally in the birth canal, accumulating fluid between both forelimbs. The size of the foetal head exceeded the normal size, completely filling the birth canal. The fetus's head was palpated, appearing to be like a balloon filled with water. The final diagnosis was a hydrocephalic foetus causing dystocia (Fig. 1).

Treatment

We used epidural anaesthesia to restrain the animal, cleaned the site with povidone iodine, and injected 3 ml of 2% lignocaine in-between the sacro-coccygeal vertebrae. We carefully introduced the BP blade into the birth canal to make multiple small incisions, as the foetal head was disproportionally larger than the pelvic cavity. This allowed fluids to drain through the birth canal and reduced the size of the fetus's head. Following copious lubrication, the Williamson obstetrical long eye hook was applied to the eye, and a snare was applied to both forelimbs on the pastern joint to provide traction. This successfully ejected the foetus, trailing the foetal membranes behind. The dead fetus was examined and found to have hydrocephalus, cystic cephalus, micro-ophthalmia, and a cleft lip. Fluid therapy stabilized the dam. The antibiotic (Enrofloxacin 12 mL bid × 5 days IM), anti-inflammatory (Meloxicam 15 mL bid × 5 days IM), calcium (Calcium borogluconate 200 mL × 2 days slow IV), and uterotone 100 mL × 5 days bid × orally) were administered.

Discussion

Anatomically, ventricular plexuses, ependymal cells, the pia-glial membrane, and pia-arachnoid blood vessels produced the CSF. It flows from lateral ventricles to the third ventricle through the foramen Monro; from the third ventricle to the fourth ventricle through the aqueduct Sylvious; and from the fourth ventricle, it flows into subarachnoid space through the foramen Luschka. The subarachnoid space absorbs cerebrospinal fluid (Malik et al., 2017). The head of a foetus with internal hydrocephalus is dome-shaped (Mohammed et al., 2017), whereas the head of a foetus with external hydrocephalus is football-shaped with an excessive amount of fluid (Sastry, 1971). Sharma et al. (2015) reported that the calf with either type of hydrocephalus possessed thin cranial bones. Obviously, in cases of severe fetal hydrocephaly, per-vaginal delivery is difficult. In such cases, we compress the head by making a stab incision on the football-shaped foetal mass to reduce the size appropriate for vaginal delivery, then drain the fluid to expel the foetus (Upasana et al., 2012). In the present case, the fetal head was disproportionately larger than the pelvic canal, making it difficult for per-vaginal delivery. Therefore, the per-vaginal stab incisions in the foetal head facilitated the drainage of CSF and made the foetus retrieval easier. Buffaloes have also reported dystocia due to a hydrocephalus foetus (Sharma et al., 2015). Wilcock (2007) reports that microphthalmia, characterized by an abnormally small eye globe, occurs in all species. Anophthalmia and microphthalmia are usually caused by the eye's arrest at different growth stages of the optic vesicle (Warburg, 1993).

Conclusion

In the case of dystocia due to congenital anomalies in the fetus, it is better to manually expel the fetus by an appropriate obstetrical procedure rather than opting for a much more invasive fetotomy or caesarean section. In the current case, we expelled the foetus by puncturing the foetal head transvaginally and relieved it in the same manner.

References

Hur T, Kang S, Jung Y, Do Y, Choi C, Ryu I, Cho S, Song K, Suh G. Severe bilateral microphthalmia in a Holstein calf, J Vet Clin. 2008; 25: 411-414.

Fig. 1: Hydrocephalus, Cysticcephalus, Micro-ophthalamia and Cleft lip

Malik AA, Ganie MA, Kumar A. Vaginal delivery of congenital hydrocephalic calf in a Murrah buffalo with partial fetotomy. Buffalo Bulletin. 2017; 36(2):259-261.

Mason CS, Buxton D, Gartside JF. Congenital ocular abnormalities in calves associated with maternal hypovitaminosis A. Vet Rec. 2003;153 (7):213-4. doi: 10.1136/vr.153.7.213.

Mohammed AHA, Mohammed HE. A Retrospective study of the congenital anomalies of the axial and appendicular skeleton in cow calves, Assiut Vet Med J. 2017; 63(153):88-99.

Noakes DE. Arthur's Veterinary Reproduction and Obstetrics. 8th Ed WB Saunder's Comp., Philadelphia, 2009; Pp 390.

Purohit GN. Hydrocephalus in a cow: a case report, Indian J Anim Reprod. 2006; 27:98-99.

Roberts SJ. Veterinary Obstetrics and Genital Diseases, 2nd ed, CBS Publishers, New Delhi, 1986; Pg 280

Salunke SP, Amle MB, Zambre PC. Dystocia due to hydrocephalus in Pantharpuri buffalo, Indian J Anim Reprod. 2001; 22:9.

Sastry GA. Veterinary Pathology. 3rd edn, CBS Publishers and Distributors, Tirupati. 1971; 345.

Sharma SK, Joshi M, Khosa JS, Singh D. An unusual case of dystocia due to hydrocephalic monster in a buffalo, International J Sci, Environ Technol. 2015; 4: 300-304.

Upasana R, Bhar GR, Varughese EE, Ghuman SPS, Honparkhe M. Per-vaginal delivery of a murrah buffalo calf with congenital high grade hydrocephalus internus, Veterinary Practitioner, 2012; 13(2):310-311.

Warburg M. Classification of microphthalmos and coloboma, J Med Genet. 1993; 30: 664-669.

Wilcock BP. Eye and ear. In: Jubb, Kennedy and Palmer's pathology of domestic animals. 5th ed. London: Volume 1: Saunders Elsevier, 2007; 459-546.

Yadav RS. Hydrocephalus in a crossbred cow: A case report, Vet Practitioner, 2008; 9(2):118.