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Research Paper

Hydrocephalic foetus and its per-vaginal delivery in a non-descript Jersey crossbred cow

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Abstract: Hydrocepalus is defined as absolute increase in cerebrospinal fluid (CSF) within the brain ventricular system, within meninges or both, thereby leading to the swelling of the cranium. This congenital, hereditary defect is reported occasionally in ewe, doe, mare and sow whilst it is rarely seen in cattle and buffalo. This communication describes a case of congenital hydrocephalus in foetus and per-vaginal delivery by mutation and forced traction without performing fetotomy or surgical intervention.

Keywords: Hydrocephalus, congenital, foetus, per-vaginal delivery

Introduction

Hydrocephalus is dropsical condition of the brain, characterized by excess accumulation of cerebrospinal fluid in the cranial cavity which results in progressive enlargement of foetal head. It is congenital defect, mainly seen due to abnormal development of foetus during pregnancy; however, hereditary, infectious and nutritional factors can also predispose this condition (Roberts, 1986). Calves with pronounced cranial enlargement usually die within 48 hours, but less severely affected calves may survive for several weeks or longer (Leech, et. al., 1978). Hydrocephalus condition occurs mainly due to excess production of CSF, defective absorption of CSF or interference in the passage of CSF (Sharma et. al., 2015). Hydrocephalus condition may be internal or external. Internal hydrocephalus is seen when CSF fluid is accumulated in ventricles of brain anterior to the occulusion of intra-vantricular canals and head appear as dome shaped or bull dog shaped with incomplete development of cranium. While as, external hydrocephalus is characterized by fluid accumulation outside the brain in sub-arachnoid spaces and head appear as football shaped (Malik et. al., 2017). The condition appears as a flaccid fluid filled sac containing clear serous fluid. In this condition, morphological changes includes; enlarged, dome shaped head, shorter body length and marked thinning of cranial bones (Hareeswaraiah et. al., 2020). Owning to the foetal head enlargement, the animal is unable to expel the foetus through birth canal and results in dystocia.

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History and observations

A five-year-old non-descript Jersey crossbred cow, was presented to large animal obstetrics unit, Madras Veterinary College with the history of full term pregnancy and straining for the past 18 hours. The allantochorionic sac was already ruptured. The vital parameters (temperature, respiration and heart rate) were within the normal range. On manual obstetrical examination, the foetus was found to be in anterior longitudinal presentation, dorso-iliac position with both forelimbs present at the vulva and marked enlargement of cranium was felt on palpation. Based on history and clinical signs, the case was diagnosed as dystocia due to foetal hydrocephalus and dead foetus was delivered by forced traction.

Treatment and Discussion

After confirmation, epidural anaesthesia was induced in sacro-coccygeal space (6 ml of 2% Lignocaine Hcl) and proper lubrication was carried out with liquid paraffin. Snare was applied over both the forelimbs and were repelled inside the pelvic cavity and foetal head position was corrected manually. A stab incision was made on dome shaped foetal mass and excess fluid was drained out to reduce the size of the foetal head, however the fluid was not completly drained out from the foetal head. After reduction of fetal head size, snare was applied over the neck region and foetal head was relieved. The forelimbs were then expelled out by mild traction. Finally, hydrocephalus dead male foetus was delivered by mutation and traction. An uneventful recovery was seen following relieving dystocia. Post correction, cow was administered antibiotic (Inj. Enrofloxacin @ 5 mg/kg I/M, Inj Meloxicam @ 0.5 mg/kg I/M , Inj. Chlorpheniramine maleate @ 30 mg/kg I/M and Inj. Oxytocin @ 40 IU I/M.

Foetal head enlargement was located in occipital region and excess fluid accumulation confirmed the condition to be internal hydrocephalus. In the present article, hydrocephalus condition occurs mainly due to disturbances in normal circulation of CSF, either due to altered production or absorption of CSF fluid. Similar findings was also reported by Saini *et al* (2019). Congenital hydrocephalus is known to be inherited in cattle and nutritional cause especially hypovitaminosis-A may exacerbate the condition (Jubb and Kennedy 1970). Due to the vitamin-A deficiency, growth of cranium fails and compression of brain occurs. Excess fluid accumulation in the brain ventricles, results in increased intracranial pressure and enlargement of head. The enlarged head cannot easily pass through birth canal, results in dystocia (Balasubramanian et. al., 1997).

Conclusion:

Congenital hydrocephalus is seen sporadically in all large animal species, although it is relatively common in calves Saini *et. al.* (2019). Progressive enlargement of the head due to impairment in CSF drainage, results in dystocia (Hopper 2021). A stab incision on the middle of the swelling is given to drain excess fluid and compress the foetal head; thereby per-vaginal delivery of hydrocephalic foetus can be achieved successfully.

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Figures

Figure 1: Hydrcephalus foetus in Jersey calf

Figure 2: Internal hydrocephalus; dome shaped appearence