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## Dystocia due to hydrocephalous fetus and its management in a cow

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**Abstract**

An indigenous non-descript cow was suffering from prolonged labor since 12 hours. On clinical and per vaginal examination the case was diagnosed as dystocia due to hydrocephalus fetus. A dead calf was manually delivered per vaginam with gentle and careful traction after proper lubrication. The delivered fetus showed marked increased in head size and fluid filled cranial cavity. The dam recovered uneventfully after 3 days.

**Keywords:** Dystocia, Hydrocephalus, per vaginam

**Introduction**

Hydrocephalous, also known as ‘water on the brain’ is a condition characterized by abnormal accumulation of cerebrospinal fluid (CSF) in the cavities of brain which causes increased intra cranial pressure inside the skull and marked enlargement of the fetal head. The affected calves with hydrocephalous are born near the end of gestation with a birth weight of 11.36 to 15.9 kg (Whitlock, 2010) <sup>[9]</sup>. Most of the affected animals are either born dead or die shortly after birth. The calves borne alive show signs of cerebral inhibition such as depression, weakness, dropsy ears and head, blindness, recumbency and convulsion. Postmortem examination of the affected fetus reveals malformation of bones of the skull which appears as loosely organized bony plates and accumulation of fluid in the cranium with no recognizable brain tissue along with dilatation of the spinal canal (Whitlock, 2010) <sup>[9]</sup>. There is stenosis of the mesencephalic aqueduct (Ferris *et al.*, 2011) <sup>[3]</sup>. Hydrocephalous have been reported in many species including cattle (Sharda and Ingole, 2002; Murugan *et al.*, 2014) <sup>[8, 6]</sup> buffalo (Bugalia *et al.*, 1990) <sup>[2]</sup> horse (Ferris *et al.*, 2011) <sup>[3]</sup> and pig (Arthur, 1975) <sup>[1]</sup>.

**History and clinical finding**

A six year old full term pregnant non-descript cow was presented with the history of labour since 12 hours. On clinical examination the rectal temperature, heart rate and respiration were found within the normal limit. Fetal fore limbs were noticed protruding out of the valva. Gynecological examination per vaginam revealed, fetus in anterior longitudinal presentation. On further examination, marked swelling was palpated in skull of the fetal head.

**Result**

The fetus was delivered per vaginam, looking to the risk involved as well as to reduce the cost due to C-section, with careful traction after proper lubrication. The fetus was found dead at the time of delivery. The delivered fetus had markedly enlarged fluid filled skull indicating congenital abnormality with a body weight of 13.192 Kg. Based on the findings of clinicogynecological examination, the case was diagnosed as dystocia due to fetal hydrocephalus.

The cervical and vaginal parts of the dam was cleaned with Normal saline and Metronidazole. The dam was treated with Lenovo AP IU solution (@15 ml into each horn daily for 3 days) and Flunixin Meglumine (Unizif @ 10 ml I/M daily for 4 days). The cow showed uneventful recovery on third day of post treatment.



**Fig 1:** Dead Hydrocephalous Fetus with fluid in the cranium

### Discussion

Hydrocephalous can be hereditary or due to infectious causes. Occasionally it may be also associated with vitamin A deficiency, hydroamnion, dwarfism and high copper levels in the liver (Nuss *et al.*, 1967) <sup>[7]</sup>. Numbers of infectious diseases have been reported to cause hydrocephalous of the fetus as a result of infection of the dam during 62 to 96 days of pregnancy. Viruses responsible for hydrocephalous includes akabane virus, bovine viral diarrhea virus, cache valley virus and blue tongue virus. The infection of the fetus causes either excessive production of cerebrospinal fluid or damage to the outflow tract of the cerebrospinal fluid resulting in progressive enlargement of the fetal head with increased fluid pressure within the brain and malformation of the brain and skull (Leaold *et al.*, 1974) <sup>[5]</sup>. In more severe cases there is marked thinning of the cranial bones (Arthur, 1975) <sup>[1]</sup>. Hydrocephalous results due to disturbance in normal flow of CSF and its reabsorption. CSF is produced primarily by the choroid plexus and by secondary extrachoroidal sites inside the brain (Ferris *et al.*, 2011) <sup>[3]</sup>.

Congenital hydrocephalous caused by a lethal autosomal recessive gene with incomplete penetration has been reported in cattle which is termed as neuropathic hydrocephalous (Jabb and Kennedy, 1970) <sup>[4]</sup>. It is the consequence of single DNA base pair mutation on both alleles. This genetic mutation leads to the abnormal function of an important protein that is involve in the development and maintenance of the CNS resulting in neuropathic hydrocephalous syndrome.

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