DYSTOCIA DUE TO HYDROCEPHALUS FOETUS WITH EXTENSIVE MULTIPLE PHYSICAL DEFORMITY IN A CROSSBRED COW

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ABSTRACT

A case of dystocia due to hydrocephalus foetus with extensive multiple physical deformity in a crossbred cow was reported.

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Key Words: Dystocia, Hydrocephalus calf, Multiple physical deformity, Cow

INTRODUCTION

Hydrocephalus is the dropsy of the brain with recognizable swelling of cranium due to excessive accumulation of cerebrospinal fluid either in ventricular system or in between parenchyma of brain and meninges (Dar *et al.*, 2012). It has been a frequently reported deformity of the cranial bones, especially frontal, temporal and parietal. Most commonly affected species are swine, canines and bovines. Present communication deals with the per-vaginal delivery of a multiple anomalous crossbred in a Jersey calf.

CASE HISTORY AND OBSERVATIONS

A full term crossbred Jersey cow at second parity with the history of ruptured water bag with severe unsuccessful abdominal straining was presented to Emergency Critical Care Unit, Madras Veterinary College, Chennai. Upon general clinical examination all the vital signs were within normal range. External observation revealed persistent abdominal straining with edematous vulval lips. Per-vaginal examination revealed a comparatively small foetus in posterior longitudinal presentation (P_1), dorso-sacral position (P_2) and bilateral hip flexion with rigid flexural contracture of hock joints (P_3).Cervix was fully dilated and amniotic sac was intact with no vital reflex in foetus.

TREATMENT AND DISCUSSION

Manual rupture of amniotic sac was done based on complete dilatation of cervix giving fully patent birth passage. Following obstetrical mutation and forced traction, a dead, premature male foetus with extensive multiple physical deformities was relieved. Gross foetal examination revealed moderate degree of hydrocephalus, kyphotic vertebral column, imperfect hair growth with faint cement colour skin, only one nostril or nasal orifice, mild degree of hindlimb arthrogryposis and imperfect fusion of palatine bones making a cleft of about 7 cm with continuation of oral cavity and nasal cavity (Oro-nasal fistula). With help of a sterile 30 ml syringe and 18 G needle slightly brownish to reddish colour CSF was collected and stored at 4^0 C for further cytological and biochemical analysis. Opening of carcass during post-mortem examination showed gross internal pathological alteration such as haemoperitoneum, hepatomegaly with whitish necrosis, severe congestion of liver as well as spleen parenchyma, spleenomegaly with faint bluish discoloration, haemopericardium and heavy congestion of lungs.

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Cytological and biochemical analysis of hydrocephalic fluid revealed 95% of lymphocyte and 5% of neutrophils as well as 6.4 gm proteins, respectively which are normally absent in healthy calf CSF, might be due to transplacental transfer of viral infection to foetus in the present case. Placental transfer of viral agents like blue tongue and BVD-MD may be the cause for hydrocephalic bovine foetus (Roberts, 1971). Fluid or cell movements as well as ion transport in brain ventricles are due to complex organelles like cilia. Intraflagellar Transport (IFT) is a highly organized process for development of cilia. It has already been reported due to mutations in IFT genes ciliary beating may be impaired and dyskinesia will lead to pathological alteration like skeletal patterning defect and hydrocephalus in mice (Banizs *et al.*, 2005). In the present case skeletal deformity like mild degree of arthrogryposis, imperfect fusion of palatine bones and fronto-parietal suture joint in cranium and kyphosis of spinal column with development of internal hydrocephalus might be attributable to either inherited defect in cilia formation genes or dysplasia of cilia in brain ventricles due to intrauterine acquire of infection. Incidence of arthrogryposis is mostly seen in inbreeding practicing herds (Singh, 1964). Multisystem malformed calves have also been reported in areas where deficiency of minerals is there in regional soil (King, 1965). Present case describes about several pathologies of developmental biology in bovine foetus and multiple phenotypical abnormalities which could be attributable either to inbreeding or topographical mineral deficiency during gestation. It has been reported that extensive syringomyelic cavity in white matter of spinal cord and incomplete fusion of neural tube during foetal life may lead to cleft palate associated with arthrogryposis (Benda, 1959). In present communication congenital multiple syrinx cavities at kyphotic thoraco-lumbar spinal cord region with imperfect neural development of central nervous system could be due to the development of anomalies in the foetus. Abnormal development may be solely due to failure of gene control, time and space pattern disorganization of expression of correct cell mass as well as cell product for dependable organ formation and local environmental effects on gene expression (Khoury and Gruss, 1983).

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Fig.1. Hydrocephalus foetus with kyphotic vertebral column and imperfect hair growth

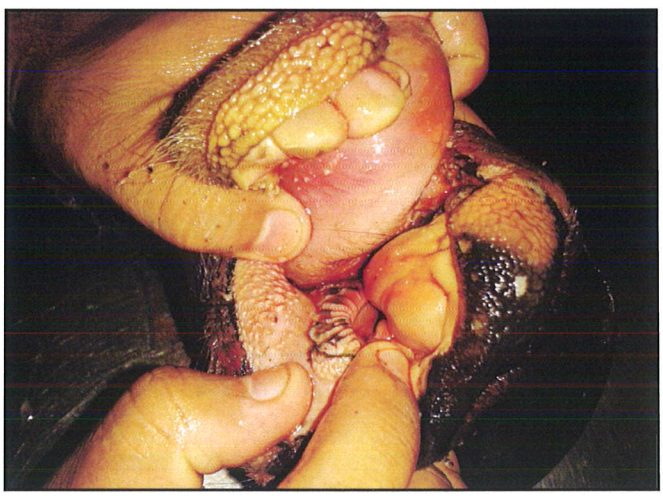

Fig.2 - Imperfect fusion of palatine bones making a cleft of about 7 cm