

Short Communication

A CASE OF CONGENITAL HYDROCEPHALUS IN A CALF AND ITS SUCCESSFUL RECOVERY

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ABSTRACT: In the present study, a 3-days old female calf showing the symptoms of dome shaped skull, weakness, poor suckle reflex, head tremors, pyrexia and convulsion was presented to the clinics. Through clinical examination, case history as well as laboratory examinations it was established that the calf was suffering from Congenital hydrocephalus and the calf was treated with Mannitol as dehydrating agent to reduce intra-cranial pressure, antibiotics to reduce bacterial load and Vit. A therapy to check possible hypovitaminosis A. After 10-days of treatment, the calf showed uneventful recovery.

Key words: Calf, Congenital hydrocephalus, Mannitol, Vitamin A.

Hydrocephalus is accumulation of fluid inside brain. If Cerebrospinal Fluid (CSF) accumulates inside the brain due to any reason, distension of cranial bone and enlargement of skull is seen which leads to increase of the intracranial pressure. Mainly two types of hydrocephalus have been found according to the site of brain involvement. Whenever the CSF is accumulated in the lateral ventricle it is termed as Internal Hydrocephalus and when CSF accumulation takes place in third and fourth ventricle and sub-arachnoid spaces it is known as Communicating hydrocephalus.

Hydrocephalus occurs mainly due to three reasons, as excessive production of CSF, defective absorption of CSF and interference in the passage of CSF.

Case history

A 3 days old female calf was presented to the clinics with the symptoms of enlargement of head (dome shaped skull) weakness, poor suckle reflex, droopy ears and head, pyrexia, spasm of limbs, head tremors, blindness, papilloedema and nystagmus. More over the owner reported that the calf was having convulsion for 5 times within this span of its life. On interrogation, the owner reported that the mother was having fowl smelling diarrhea, coughing, nasal discharge and pyrexia during 5 months of gestation period. More over the dam was not getting sufficient greens throughout her gestation period.

Physical examination revealed that frontal bones of skull in that portion were not formed

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Before Treatment.



On 2nd day of treatment.



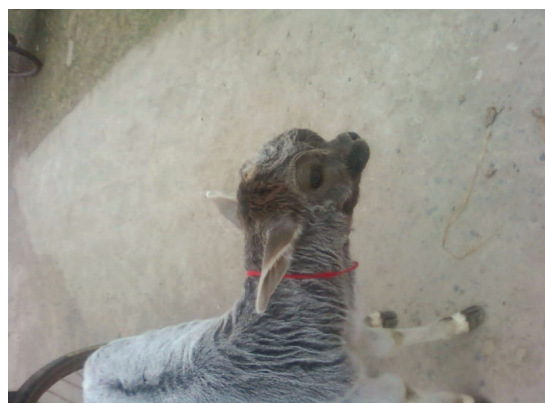
On 4th day of treatment.



On 6th day of treatment.



On 8th day of treatment.



On 10th day of treatment.

and under the skin a fluid filled cavity was present. Haematological studies revealed increased neutrophil count and lymphocyte count. Biochemical studies revealed lower glucose content in CSF and chloride content is also lesser.

For confirmatory study, Pandy's test was undertaken and for this study three drops of CSF is collected by puncturing cistern and two drops of 10% aqueous solution of carbonic acid is added with it. CSF became turbid and yellow instead of watery and clear which is indicative for pathological condition and revealed the presence of globulin. On the basis of history, clinical examination, hematological study, biochemical study and Pandy's test the case was diagnosed as congenital hydrocephalus.

Treatment

On the very first day, the calf was treated with Inj. Mannitol @ 2gm/kg.b.wt as a dehydrating agent to reduce intracranial pressure. To combat the bacterial infection Inj. Cefotaxime @500mg I/M daily for 5 days was given. To correct possible hypovitaminosis A, Inj.vit A @2ml I/M on every 2 days interval for 5 occasions was given. Another dehydrating agent, glycerine was advised @ 20ml daily to be given orally from first day onwards. Inj. DNS 5%, 1 bottle was given I/V on the very first day. To reduce the temperature, inj. Melonex plus (Intas) @2ml I/M was given.

Hydrocephalus may appear either as congenital anomaly or as acquired anomaly. Congenital hydrocephalus develops due to production or accumulation of increased volume of CSF during gestation period for which stillborn or dummy calves may be born with a domed appearance of skull (Greene *et al.*, 1974). The case may be compared with meningocele, where defect of anatomical

development is the main reason. Though about 80-90% of human fetuses or newborn infants with Spina bifida (anatomical developmental defect of spine) - often associated with meningocele or myelomeningocele develop hydrocephalus (Wikipedia 2014). The present case was different than meningocele, as it responded to the medicine and surgical intervention was not required. Correction of meningocele of a non-descript cattle by surgical means was reported earlier (Maji *et al.*, 1994).

In congenital hydrocephalus inheritance and vit. A deficiency have been implicated (Blood 1987). Intrauterine viral infection of the fetus namely Bovine viral diarrhoea, Akabane virus, Blue tongue virus may also play a role (Konno *et al.*, 1982).

For acquired hydrocephalus so many factors may play a major role namely cerebral cyst, Medulla blastoma, T.B. meningitis, stenosis of drainage duct etc (Blood 1987). Congenital hydrocephalus is seen sporadically in all large animals although it is relatively common in calves. Greene (1974) observed this type of congenital defect in Holstein, Hereford, Ayrshire and Choloralis cattle respectively but in non descriptive cattle any previous report of such case is not available.

From the Photographs (1-6), it has been revealed how the Calf was improving gradually. After 10 days of treatment, it has been observed that the calf was able to behave like a normal calf, her sucking reflex and movement reflex improved. Temperature subsided, enlargement of the head also reduced to great extent. Moreover, no history of convulsion was recorded within 10 days.

During physical examination, it was seen that the frontal bones of skull in that portion were not formed and skull was dome shaped. This finding corresponds with the observation

of Whitlock (2008). The animal was having convulsion for 5 days within 3 days which was also in accordance with the findings of Konno *et al.*(1982). As the Vit.A therapy improved the condition of the new born calf, it was thought that this condition was inherited with coexistence of hypovitaminosis A which might be due to lack of greens in the ration of the dam in the gestation period and the said findings are in accordance with the findings of Blood (1956). From the history it was apprehend that the dam might be victim of bovine viral diarrhoea during its 5 months pregnancy for which the new born go to the infection and haematological study revealed increased neutrophil count which in turn supported the view of the auther. Moreover, presence of pyrogen in the CSF was established through the examination of CSF. Normally, CSF is clear and watery due to the presence of albumin but in that case the colour of CSF was turbid and yellow due to presence of globulin. As the pyrogen utilized the glucose the glucose content was lower in CSF for which DNS (5%) was administered. As mannitol was given as dehydrating agent, sodium was excreted through urine and to balance the situation supplementation of sodium was done by giving DNS. To combat the bacterial load broad spectrum antibiotic which could cross the blood brain barrier, namely, Cefotaxime was used for 5 days. The literatures available so far revealed that life span of affected new born was very less, but in this study through this treatment protocol the calf was leading normal life after 2 months of treatment, as reported.

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