

Case Report

Surgical management of congenital meningo encephalocele in a new born jersey calf: A case report

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ABSTRACT

Objective: Surgical correction of congenital meningo encephalocele in a new born Jersey calf.

Materials and methods: A day old jersey calf was presented with a swelling over frontal region, which was diagnosed as congenital cranial meningocele by findings of clinical examination, radiography and the same was corrected surgically under local infiltration anesthesia using lignocaine hydrochloride.

Results: Recurrence was not observed in the calf and it was recovered uneventfully

Conclusion: Congenital defects should be attended as earlier as possible so as to increase the chance of survivability.

KEYWORDS

Crania bifida, Meningocele, Surgical correction

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INTRODUCTION

Cranial meningocele is a congenital anomaly mostly seen in domestic animals, especially in cattle ([Ayhan et al., 2013](#)). In cranial meningocele, fluid filled meninges protrude through a defect in the cranium ([Leipold and Davis, 1993](#)) and defect may be due to defective ossification of the skull ([Oliver et al., 1987](#)). The defects on the skull have been reported mostly on frontal and occipital regions. In this paper an unusual case of congenital meningo encephalocele and its surgical management was discussed.

History and Diagnosis: A day old jersey cross female calf was presented to Department of Veterinary Surgery and Radiology with a history of swelling over the frontal region (**Figure 1**). The calf was unable to lift its head and unable to suckle due to weight of the swelling. Physical examination of the swelling revealed a fluid filled sac situated over the frontal bone close to the nuchal's crest. The extra cranial sac was found to have narrow stalk at its base. Vital signs like temperature, pulse and respiratory rates were well within the physiological range. Radiograph revealed fluid density in the sac with a narrow stalk connecting to frontal bone (**Figure 2**). However there was no involvement of frontal bone. Further, the calf did not have any nervous signs. Aspiration disclosed clear colour less fluid. Based on the history, physical examination and radiographic findings, the swelling was diagnosed as cranial meningocele and was corrected surgically.

TREATMENT AND DISCUSSION

The calf was controlled in sternal recumbency and was operated under local infiltration anesthesia with 1% Lignocaine hydrochloride. The frontal region was prepared for aseptic surgery and an elliptical skin incision was made at the base of the sac. After separation of the skin, fluid filled meningeal membranes were noticed protruding out from the cranium through the frontal opening. These meningeal membranes were ligated close to the defect in the frontal bone and then resected (**Figure 3**). The skin was closed as per standard procedures using braided silk (**Figure 4**). Post-operatively streptopencillin dosed at 10 mg/Kg body weight intramuscular injection once daily for 5 days and meloxicam dosed at 0.2 mg/Kg body weight subcutaneously once daily for 3 days were given. Animal showed uneventful recovery by 2nd postoperative week.

Meningo encephalocele goes synonymous with spina bifida and cranial meningocele etc. The condition is a

rare form of neural tube defect (NTD) which is observed at the time of birth, in which, the neural tube is unable to close completely. The neural tube is a hollow, embryonic structure that gradually develops into the central nervous system, comprising of the brain and spinal cord. This in turn creates a gap or hole through which cerebrospinal fluid, brain tissue, and the membrane covering the brain (Meninges) protrude into a sac-like formation ([McComb and Chen, 1996](#)). Herniation of fluid filled meninges is due to defects in the cranium especially on frontal bone at its medial side. This was also attributed to defective union of related suture lines ([Maxie and Youssef, 2007](#)). In the present case also, the herniation was noticed on the frontal bone nearer to nuchal's crest.



Figure 1. Photograph showing cranial meningocele in a jersey cross calf.

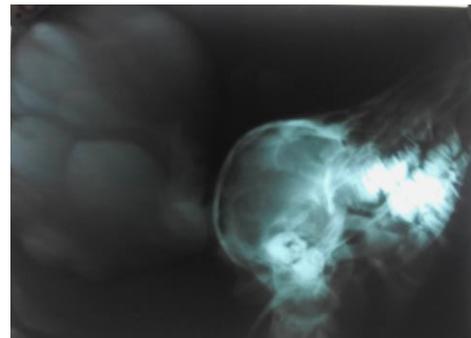


Figure 2. Radiograph showing fluid density in the swelling.

This condition is usually named after its location. Congenital giant occipital Meningo encephalocele was reported in a Holstein calf fetus by [Ayhan et al. \(2013\)](#). Diagnosis of this condition is done by signalment itself but the nature and degree of involvement of meninges and the magnitude of defect in the cranial vault have to be assessed by diagnostic imaging like radiography as in the present case. [Back et al. \(1991\)](#) diagnosed a meningocele at the anterior fontanelle in a two-and-a-half month old Meuse-Rhine-Yssel calf after radiographic and ultrasonographic evaluation.

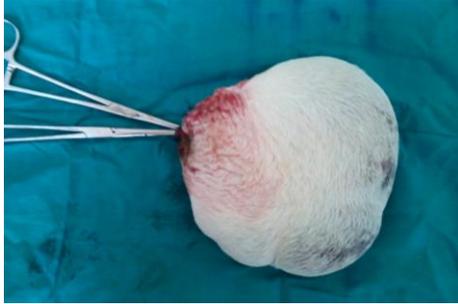


Figure 3. Photograph showing the resected meningocele

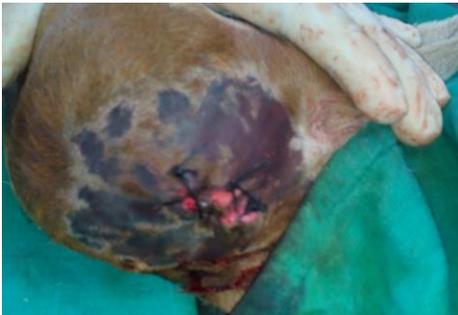


Figure 4. Photograph showing the closure of hernia ring with skin sutures.

The surgical procedure followed in the present case was similar to that of [Justin et al. \(2011\)](#), who treated a cranial meningocele by surgical correction after draining the fluid in the sac, but in the present case the meningocele was corrected surgically without draining fluid from it. The non recurrence of meningocele in calf might be due to progressive closing of the defect during its growth. The owner of the calf was advised to avoid natural service in further lactations so as to prevent the hereditary form of Meningo encephalocele.

CONCLUSION

Congenital defects like meningo encephalocele, if treated as early as possible can save the life of the animal as in the present case.

CONFLICT OF INTEREST

The authors declare that they have no competing interest.

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REFERENCES

- Ayhan A, Duygu Y, Ahmet CD (2013). Congenital giant occipital meningoencephalocele in a holstein calf fetus. *Kafkas Universitesi Veteriner Fakültesi Dergisi*, 19: 1065-1069.
- Back W, van den Belt AJ, Lagerweij E, van Overbeeke JJ, van der Velden MA (1991). Surgical repair of a cranial meningocele in a calf. *The Veterinary Record*, 24: 569-571.
- Justin W, Simon BMS, Ayyappan S, Ramani C, Velavan, Kumar RS (2011). Surgical management of cranial meningocele in a calf. *Tamilnadu J. Veterinary & Animal Sciences*. 7: 164-166.
- Leipold HW, Davis SM (1993). Congenital defects in cattle and sheep. In: *Current Veterinary Therapy*, Vol 3, Food Animal Practice. Howard JL (Edn.), Philadelphia, WB Saunders; p 89.
- Maxie MG and Youssef S (2007). Malformations of the Central Nervous System. In: *Pathology of Domestic Animals*, 5th ed., Vol. 1, Maxie MG (Ed.), Elsevier, Saunders; pp 301-302.
- McComb JG, Chen TC (1996). Closed spinal neural tube defects. In: *GT Tindall, PR Cooper, & DL Barrow (Edn.), The practice of neurosurgery*, Baltimore: Williams & Wilkins; pp 2754-2777.
- Ohba Y, Iguchi T, Hirose Y, Takasu M, Nishii N, Maeda S, Kitagawa H (2008). Computer tomography diagnosis of meningoencephalocele in a calf. *The Journal of Veterinary Medical Science*, 70: 829-831.
- Oliver JE, Hoerlein BF, Mayhew IG (1987). *Veterinary Neurology*. WB Saunders, Philadelphia.
