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CH Vinay Kumar

Assistant Professor

(Contractual), Department of
Veterinary Clinical Complex,
College of Veterinary Science,
Garividi, SVVU, Andhra
Pradesh, India

CH Ramya Sudha

Assistant Professor

(Contractual), Department of
Veterinary Surgery and
Radiology, College of Veterinary
Science, Garividi, SVVU, Andhra
Pradesh, India

K Manoj Kumar

Assistant Professor, Department
of Veterinary Surgery and
Radiology, College of Veterinary
Science, Garividi, SVVU, Andhra
Pradesh, India

V Vennela

Fifth professional year B.V.Sc &
A.H, College of Veterinary
Science, Garividi, SVVU, Andhra
Pradesh, India

Corresponding Author:

CH Vinay Kumar

Assistant Professor

(Contractual), Department of
Veterinary Clinical Complex,
College of Veterinary Science,
Garividi, SVVU, Andhra
Pradesh, India

Surgical management of cranium bifidum with meningocele in a male kid: A case report

CH Vinay Kumar, CH Ramya Sudha, K Manoj Kumar and V Vennela

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Abstract

A day old male kid was presented with a history of swelling at the parieto-occipital region and unable to lift its head and suckle since birth. Based on physical and radiographic findings, it was diagnosed as a case of cranium bifidum with meningocele. Meningocele was ligated and resected close to its base under local anaesthesia using 2% lignocaine. Clinical condition of the kid was not improved on follow-up and died on 2nd day after surgery. This case report highlights a rare case of congenital meningocele with cranium bifidum in a male kid.

Keywords: Cranium bifidum, meningocele, male kid, surgical management

1. Introduction

Neural tube defects are congenital abnormalities of the central nervous system that occur when the neural tube fails to close properly during embryonic development (Wallingford *et al.*, 2013) [7]. This neural tube defect subsequently leads to a failure in the development of the skeletal encasement surrounding the affected region of the neural tube. This focal bone defect in the cranium usually with protrusion of meninges to form a CSF-filled sac-like swelling called cranial meningocele. These herniations may occur at frontal, parietal or occipital regions. Meningocele may also occur in cervical, thoracic and lumbar vertebrae in addition to cranium. Cranial meningocele has been reported in both humans and several domestic animal species, and it appears to be more common in cattle than in other domestic animals (Gangawar *et al.*, 2014) [3]. Malnutrition, exposure to teratogenic viruses, and the use of drugs known to have teratogenic side effects are major environmental factors that are responsible for the development of neurological defects (Lopez and Wilson 2000) [4]. The current case relates to the Surgical management of cranium bifidum with meningocele in a day old kid.

2. Case history and observation

A day-old male kid was presented to Veterinary Clinical Complex, College of Veterinary science, Garividi with a history of swelling at the caudal aspect of the head and unable suckle since birth. Clinical examination shows animal is recumbent and unable to lift its head and stand. Examination of the swelling revealed fluid filled cyst like consistency located at parieto-occipital region (Fig.1) and all the vitals are within normal range. Lateral radiograph of skull revealed a swelling has homogenous soft tissue opacity with a calvarial defect in the parietal region (Fig. 2). Based on Clinical and radiographic examination findings, it was diagnosed as a case of cranium bifidum with meningocele. Accordingly, surgical treatment was planned.

3. Surgical Procedure

After aseptic preparation of the surgical site (parietal region), local anaesthesia was achieved by infiltrating the surgical site with 2% lignocaine. An elliptical skin incision was made around the base of the meningocele and then meningeal membranes were identified and ligated close to the cranial defect using polyglactin 910 (size 1-0) and then sac was resected. The skin incision was closed routinely.

Post-operatively Inj; NS-20ml Intravenously, inj; Dexamethasone @ 0.25mg/kg Intravenously and ceftriaxone @ 10mg/kg intravenously were administered and advised owner to continue the same treatment for 5 days. Surgical procedure is shown in Figures. 3A-3E.

4. Results and Discussion

Hereditary transmission of craniomeningocele has been reported in a number of domestic animals, including cattle, sheep, and pigs. The condition can be diagnosed using radiography, ultrasonography, and computed tomography (Yadegari M *et al.*, 2013, Mirshahi A, 2012) [8, 5]. Radiographic examination in the present case shows calvarial defect in the parietal region with homogenous opacity of the swelling, suggesting that brain was not involved thereby confirming it as a meningocele with cranium bifidum. Surgical procedure was followed in the present case was similar to that of Mudasir Ahmad Shah *et al.* (2022) [6]. The clinical condition of the kid was not improved on follow-up and died on 2nd after surgery. Studies in lambs shows that 80.6% congenital neurological abnormalities have been associated with abnormalities in other organs (Dennis SM, 1975) [2]. Prognosis of the present case was consistent with the findings of Ahmadnejad M *et al.* (2021) [1], where the animals that are unable to stand and suckle from birth have poor prognosis.

5. Conclusion

Craniomeningocele has been reported in a number of domestic animals, including cattle, sheep, and pigs, but no reports are available in kids. This case report highlights the diagnosis and surgical management of cranium bifidum with meningocele in a day old kid. In the present case, there have been other malformations which have been overlooked results in death of the animal.



Fig 1: Photograph showing Cranial meningocele in a kid.

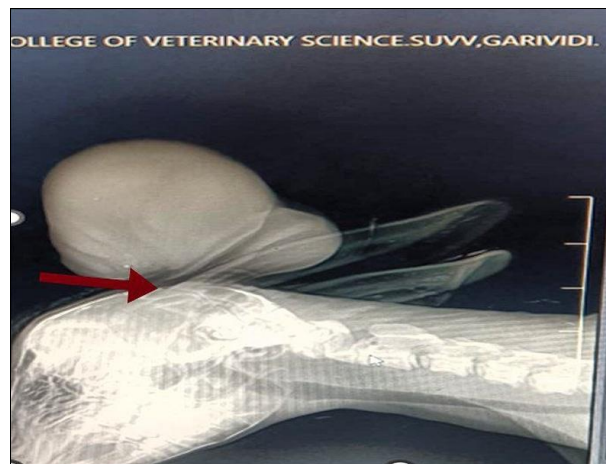


Fig. 2: Radiograph showing Crania bifida (Arrow) with meningocele.



Fig 3: Surgical correction of meningocele

- Photograph showing stalk of the meningocele
- Surgical site after resection of meningocele
- Post-operative image after the closure of defect
- Image showing the resected meningocele
- Image showing the meningeal membranes in a meningocele (Excised portion).

6. Conflict of Interest

Not available.

7. Financial Support

Not available.

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