

Case report of anaesthetic management of neonate with large occipital encephalocele


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In the present case report, endotracheal intubation in a case of large occipital encephalocele presented for surgical excision was performed. As the management of airway even in a neonate is different and complex as compared to airway of old child and that of adult. It was challenging because of the difficulty in securing airway because of prone position in occipital encephalocele. The major concerns during the operation were to avoid premature rupture of the encephalocele and to manage a possible difficult airway due to restricted neck movement and inability to achieve optimal position for intubation of the trachea. Continuous monitoring of patient was done during the surgery.

Keywords: Encephalocele, Anesthesia, Difficult intubation, Prone position

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Introduction

Encephalocele is a neural tube defect characterized by sac like protrusions of the brain and membranes that cover it through openings in the skull. These defects are caused by failure of neural tube to close completely during fetal development [1-2]. Among all craniospinal dysraphisms, the incidence of encephaloceles is about 1 per 5000 live births [3]. The incidence of encephalocele is variable among different regions of world depending on the demography of the region, gender of the child, and nutritional supplementation during pregnancy, maternal age and parity. Etiology of encephalocele is still unknown [3]. The aim of this study is to describe the anesthetic challenges encountered for these cases, and describe how these problems were managed.

Case History

Patient was a 5 day female child which was a known case of occipital encephalocele (shown in figures 1 & 2). She was referred to anesthesia department for all pre-anesthetic checkup. Procedure to be performed is ventriculo-peritoneal (VP) shunting and excision of encephalocele.



Figure-1: Child with large occipital encephalocele



Figure-2: Patient in left lateral position with occipital encephalocele.

Child was full term, born by normal vaginal delivery. Her birth weight was 2.6kg. There was no history of any cyanosis and jaundice. On auscultation, I found normal S1 and S2. Bilateral air entry equal. No added sound was seen. Preoperative capillary blood gas was normal. Patient respiratory rate was 26/min. SpO2 was 96percent on room air. Airway was challenging. As the size of the encephalocele was almost equals to patient head (size at base was 15x10cms).

Preparation for difficult airway- Difficult airway was kept with I gel size 0 different size mask and C-MAC. Doughnut of appropriate size was kept to accommodate the encephalocele swelling and appropriate size padding was kept under the back so that back and head were at the same level.

Monitors were attached to the patient and IV line was secured. Vitals were Heart rate- was 150bpm, Blood pressure (BP) was 60/35mmHg, SpO2 was 100. Patient was induced with sevoflurane and succinylcholine. After 50sec intubation was done using CMAC. Intubation was done in 1st attempt. IV fentanyl 5 microgram was given. Carmen Lehman grade of glottis was 1. ETT size was-3.5 uncuffed and secured at 9cm. Bilateral air entry was checked and equal on both sides. Intra-operative patient was stable except bradycardia occurred during encephalocele excision. Heart rate dipped up to 40 and saturation went upto 30.1st brain tissue was released but heart rate was still 50, so 0.6mg of atropine bolus was injected. After the heart rate was normal between 150 to 170bpm. Patient's intraoperative blood pressure was maintained using dopamine 15microgram/kg/hour.

Intraoperative anesthesia was maintained by using sevo-flurane and oxygen (MAC 0.8 to 1). Intraoperative 1st VP shunting was done and encephalocele excision was done after that. For fluid balance-40ml of blood and 60ml of normal saline were given. Urine output was 20ml. Patient was reversed after the confirmation of spontaneous effort. Extubation was done after confirming adequate respiratory effort. Glasgow coma scale (GCS) and spontaneous eye opening was present. Before extubation blood gas analysis was done. It was found to be normal with no metabolic or respiratory acidosis or any other electrolyte abnormality was present. After extubation, Patient was shifted to recovery and monitored for 2 hour.

After that, she was shifted to surgical ICU (shown in figure3).



Figure-3: Child with bandages in surgical intensive care unit

Discussion

This case was successfully managed in PGIMER Chandigarh where it underwent surgically repairment of occipital encephalocele. Endotracheal intubation was done successfully. Airway management in pediatric patients with craniofacial malformation was very difficult for the anesthesiologist. Isada et al. study reviewed the practice of intubation in 13,557 pediatric cases and reported that the risk of difficult intubation is higher in children with congenital malformation [5].

Alternative methods for carrying out successful intubation include rolled-up blankets placed under head of child, awake intubation in the lateral position, or needle decompression of the encephalocele sac under sterile conditions. In patients with encephalocele, inadequate spontaneous respiration may occur due to structural derangement in the pontomedullary respiratory control center or its afferent and efferent pathways [6].

Quezado et al [7] and Mowafi et al [8] have put blanket below baby trunk with the head hanging from the edge of the table to facilitate intubation in such patients, while Manhas et al took aid to lift the child (one person to support the head and shoulder and a second person to lift the torso and legs) for intubation after attempts to intubate in the lateral position failed. The perioperative complications pose challenges to the anaesthesiologist and more common are respiratory complications followed by cardiovascular compli-cations.

Respiratory complications are hypoventilation, sleep apnoea, bronchospasm, laryngospasm, prolonged breath holding as a result of structural derangement of post medullary respiratory control centre or in its afferent and efferent pathways.

Cardiovascular complications included bradycardia, hypotension and tachycardia. Brainstem compression and coning causes most of the cardiac complications including cardiac arrest [9]. In patients with giant encephalocele, the large amount of brain tissue in the herniated sac usually die either shortly after birth or as a result of operation with poor prognosis. In such patients, it is generally impossible to foretell whether the infant will die quickly or will continue to live for many months or years, as size of the encephalocele itself is not a guide to prognosis. Ultimate result depends on the amount of normal brain tissue left inside the skull after the operation [10].

Conclusion

It was a good case in which successful outcome was achieved with no major complication. This case was helpful for those who find it difficult to intubate neonate with occipital encephalocele.

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