

Anesthetic management of occipital Meningoencephalocele: a case report

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Abstract

Background: Encephalocele is a broad term representing herniation of cranial contents through a congenital defect in the cranium. The incidence of encephalocele is 1 per 5000 live births. In this report we present one case of 10 month old infant with large occipital encephalocele who was treated successfully.

Case summary: A 7kg, 10 month old infant presented with a large cystic swelling measuring 30cm×20 cm arising from the occipital region. Infant was placed in the lateral position on operating table. After induction and IPPV, infant was made supine and brought to the edge of the table with an assistant supporting the swelling at the back of head while another assistant stabilizing the infant's body, taking adequate care to prevent rupture of encephalocele. After intubation and tube fixation, 1500ml CSF was drained from the swelling. Infant was placed in prone position and surgery was completed successfully.

Conclusion: For a giant occipital encephalocele, placing the infant's head beyond the edge of the table provides a good approach to intubate the patient. The removal of large quantity of CSF causes volume and electrolyte disturbances which needs to be corrected perioperatively. We need to pay attention to blood loss, maintenance of body temperature, prone position and its associated complications.

Keywords: Occipital, encephalocele, meningoencephalocele

Introduction

The term cephalocele refers to a defect in the skull and dura with extracranial extension of intracranial structures. Cephaloceles are divided into four types: meningoencephalocele, meningocele, atretic encephalocele and gliocele. Meningoencephalocele consists of a herniation of cerebrospinal fluid, brain tissue and meninges through the skull defect. If only cerebrospinal fluid and meninges herniate, it is termed as a meningocele¹. The incidence of encephalocele is 1 per 5000

live births². Anterior encephaloceles are more common in males while 70% of posterior or occipital encephaloceles occur in females. In this report we present one case of 10 month old infant with large occipital encephalocele which was treated successfully

Case report

A 7kg 10 month old infant presented with a large cystic swelling (30x20 cm) arising from the occipital region which was gradually increasing in size since birth. The

infant was found to have delayed milestones, loss of vision also since birth, crying was absent, moving all four limbs. Social smile was absent. On preanaesthetic evaluation, cardiovascular and respiratory examination was normal. Laboratory investigations were within normal limits. MRI was suggestive of giant occipital meningoencephalocele along with herniation of occipital lobe into the swelling. The surgeons planned for excision of meningoencephalocele with dural closure and closure of the defect.

Infant was brought to the operating room and placed in the lateral position on operating table. Induction was done with glycopyrrolate 3µg/kg, fentanyl 1.5µg/kg and thiopentone 3mg/kg. Muscle relaxation was achieved using succinylcholine 1.5mg/kg. After ventilating the infant with 100% oxygen with bag and mask, infant was made supine and then brought to the edge of the table with an assistant supporting the swelling at the back of head while another assistant stabilizing the infant's body, taking adequate care to prevent rupture of encephalocele. Under direct laryngoscopy we intubated the trachea with a 3mm ID uncuffed endotracheal tube. After confirmation of appropriate placement and tube fixation, 1500ml of CSF was drained from the swelling by surgeons. Infant was placed in the prone position after that.

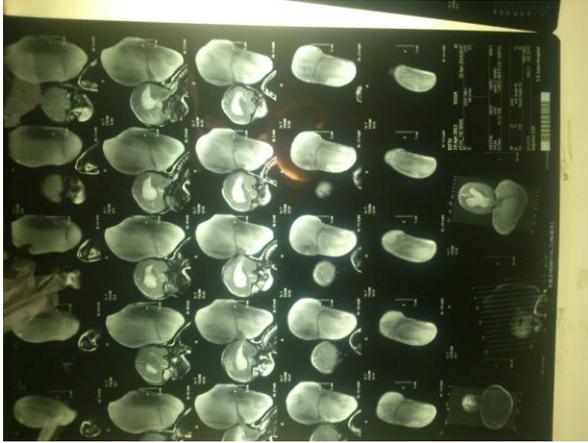
Monitoring was done with ECG, NIBP, SpO₂ and temperature monitor. Maintenance of anaesthesia was done with N₂O : O₂ :: 50 : 50, sevoflurane 1-2%, atracurium 0.5mg/kg bolus followed by 0.1mg/kg every 15min and fentanyl 0.5µg/kg every 30-60 minutes. 300 ml Ringer Lactate and 100ml blood was transfused to maintain the hemodynamics. Throughout the surgery, infant was covered

with cotton padding to avoid hypothermia. Thereafter the surgery was completed uneventfully in two hours. Patient was reversed with neostigmine 0.08mg/kg and glycopyrrolate 0.01mg/kg. Extubation was done after patient regained consciousness with good respiratory efforts and was moving all four limbs. Postoperatively infant was shifted to ICU. Paracetamol suppository 50mg was given for analgesia.



Discussion

Encephaloceles are usually covered either with normal skin, dysplastic skin or a thin distorted meningeal membrane.



The neurological prognosis in these children depends not only on the size of the sac but also on the amount of neural tissue that has herniated through the sac. These lesions are conventionally treated by excision of the herniated brain tissue and repair of the dural defect. A perioperative plan must be formulated by the anaesthesiologist based on airway management because the large size can cause restriction of head movement which can lead to difficulty in positioning for laryngoscopy and in visualizing the glottic opening. Difficult airway cart should be kept ready(LMA of appropriate size, fiberoptic bronchoscope). An alternative management plan should also be prepared in case the intubation is difficult. Mask

ventilation and intubation may also be attempted in the lateral position^{3,4}

The removal of large quantity of CSF causes volume and electrolyte disturbances which needs to be corrected perioperatively⁵. All patients with meningoencephalocele are treated with latex precautions to avoid sensitization and development of latex allergy as the meninges are exposed to the environment. Positioning the patient in prone position also demands utmost care and attention. Ventilation should not be compromised during positioning. Pressure points must be well protected. Blood losses are difficult to measure and may be considerable⁶. Like with other newborns, there may be issues with temperature regulation and maintenance of normoglycemia as infants are more prone to hypothermia and hypoglycaemia. Heat loss during surgery is difficult to control. Core temperature monitoring should be done along with warm i.v fluids and covering the patient with blankets/ cotton pads. The ultimate prognosis depends on the extent and nature of herniated contents. In our case, large posterior encephalocele containing significant brain tissue predicted a poor neurological outcome.

References

1. Barkovich AJ. Pediatric Neuroimaging. Philadelphia: Lippincott Williams & Wilkins 2000:267-1.
2. Mealey J Jr, Dzenitis AJ, Hockey AA. The prognosis of encephaloceles. J Neurosurg 1970; 32: 209-18.
3. Singh K, Garasia M, Ambardehar M, Thota R, Dewoolkar L, Mehta K. Giant occipital meningoencephalocele: Anaesthetic implications. The Internet Journal of Anesthesiology 2007;13(2).

4. Dey N, Gombar KK, Khanna AK, Khandelwal P. Airway management in neonates with occipital encephalocele: adjustment and modifications. *Paediatr Anaesth* 2007;17(11):1119–20
5. Creighton RE, Relton JES, Meridy HW. Anaesthesia for occipital encephalocele. *Can Anaesth Soc J* 1974; 21: 403-6.
6. Newfield P, Hamid RKA. Anaesthesia for paediatric neurosurgery. In: Cottrell JE, Smith DS (editors): *Anaesthesia and Neurosurgery*. 4th ed., Mosby, 2001: 519-20.