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Anaesthetic implications and considerations in a neonate with huge cystic hygroma of the neck

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Key points

Cystic hygroma in the cervical region presents a great challenge to the anaesthesiologist. The anaesthetic difficulties are because of its extension, airway management, accidental extubation, postoperative respiratory obstruction and coexisting anomalies. A key to proper management of such patients is direct communication between the surgeon and anaesthesiologist.

Abstract

Cystic hygroma is a benign tumor composed of large lymph containing cysts mainly in head and neck region. Perioperative management of such cases is a real challenge encountered by the anaesthesiologist in view of the difficult airway management and postoperative respiratory complications. We hereby report a case of 10 day old child presented with gross and huge swelling on the left side of the neck with difficulty in feeding. It was diagnosed to be cystic hygroma and a decision was made to excise the swelling, to enable the child to swallow and thrive better. Difficult intubation was anticipated and the child was intubated with inhalation induction maintaining spontaneous respiration. The intra-operative and postoperative period was smooth and the tumor was excised completely.

Keywords: Cystic hygroma, difficult airway, anaesthetic implications

Introduction

Cystic hygroma is a benign congenital malformation of the lymphatic system with incidence of 1/6000 live births. It usually presents at birth or in early infancy and 70-80% cases occur in the neck usually in the posterior cervical triangle.The remaining 20–30% occur in the axilla, superior mediastinum, chest wall, mesentery, retro-peritoneal region, pelvis and lower limbs. Treatment is surgical excision under general anaesthesia in either one or multistage resections.[1] Anaesthetic management of the airway is always difficult in neonates and young infants with large neck masses. Maintaining airway patency after induction, difficulty in intubation, perioperative dislodgement of tube and decision of extubation are the critical events in anaesthetic management.

Case report

A 10 day old child weighing 2.4 kg presented with huge swelling on left side of neck. The swelling was small in size when noticed at birth, which progressed gradually to the present size 10 cm × 10 cm (Figure 1). It was cystic, non-tender and extending from the angle of the mandible to the clavicle. The skin over the swelling looked normal with no local rise of temperature. It was associated with difficulty in feeding and child was malnourished. Systemic examination was within normal limits. Blood biochemistry was within normal limits except hemoglobin which was 9 gm %. Ultrasound neck showed a large multiseptated cystic mass measuring 9

cm x 6 cm on left side of neck. Anteroposterior (AP) and lateral X-ray of neck showed no compression or deviation of trachea.

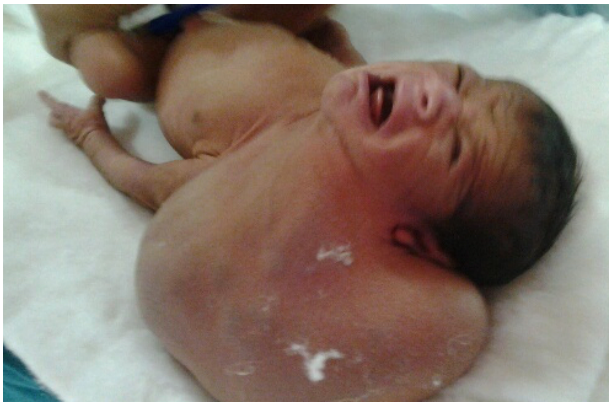

Fig. 1 Cystic hygroma of the neck

Informed written consent for anaesthesia was taken and parents were explained about anticipated difficult intubation. Fluid was attached to IV cannula in situ. Atropine 0.02 mg/kg was given intravenously. In view of anticipated difficult airway we preferred to maintain the spontaneous respiration at the time of induction. Patient was induced with sevoflurane in oxygen. After achieving adequate depth of anaesthesia, laryngoscopy was done but only epiglottis could be visualised. Ventilation with mask was done and second attempt of laryngoscopy was made. At this time vocal cords could be visualized after applying optimal external laryngeal manipulation and trachea was intubated with uncuffed endotreacheal tube of ID 3 mm, confirmed by capnography and bilateral air entry. Anaesthesia was maintained with 67% nitrous oxide in oxygen, sevoflurane and atracurium. Fentanyl 2 µg/kg was administered for analgesia. The cysts were multiloculated and excised completely and there was a blood loss of 80ml which was replaced. The duration of surgery was two hours. All the vital signs were stable in the intra-operative period. At the end of surgery, residual neuromuscular blockade was reversed with neostigmine 0.05 mg/kg and atropine 0.02 mg/kg, extubated awake and shifted to NICU. After extubation there were no signs of laryngeal edema or airway obstruction.

Discussion

Cystic hygroma also called as cavernous haemangioma, usually manifests at birth, with 90% patients being diagnosed before the age of 2 years. The most prominent sign of cystic hygroma is presence of a mass. Interference with normal breathing and swallowing are the second and third symptoms to appear.It can present as asymptomatic masses or symptomatic resulting in upper and lower airway compression.[2] It may be associated with Turner syndrome, Noonan syndrome, trisomies 13, 18, 21 and cardiac anomalies.[3]

The size and extent of the neck mass should be defined carefully in an effort to detect the potential for airway compromise and to avoid soft tissue trauma during intubation.[4] All cases must have chest x-ray to exclude the presence of intrathoracic lesions. Should the tumor be found in the mediastinum, further delineation with fluoroscopy, angiography and CT scan should be carried out.

The most important step in anaesthetic management of such patients is the provision of safe and secure airway to avoid hypoxia, as most anaesthetic mishaps result from hypoxia.It becomes mandatory to keep the difficult intubation cart ready.[5]

Induction of anaesthesia can result in the 'cannot ventilate, cannot intubate' situation or complete loss of the airway hence it is preferable to maintain spontaneous ventilation until trachea is successfully intubated. In patients with difficult airway, an awake intubation is often the primary approach of airway management under sedation and adequate application of local anaesthetics to the airway. The advantages of awake intubation are preservation of normal airway tone and respiratory efforts. Infants and children generally do not cooperate during awake intubation. It is generally easier to keep the infant anaesthetised but breathing spontaneously on 100% oxygen using an inhalational agent such as sevoflurane. Inhalational induction while maintaining spontaneous respiration provides a controlled situation and buys time in such type of cases.[6]The use of fiberoptic bronchosco-

pe for intubation may be helpful to tackle such a case of anticipated difficult intubatione, but potentially difficult and traumatic in infants.

Another problem is about airway maintenance during surgery. Considering the surgical position of hyperextension and right rotation of the neck, the possibility of accidental extubation of the endotracheal tube should always be considered.[7]

Decision of timing of extubation and postoperative care are crucial events. Postoperative airway edema is always a concern as extubation in this situation would make ventilation and intubation difficult.[8] Supraglottic edema can be prevented and treated using dexamethasone and nebulized racemic epinephrine with moist oxygen.

To conclude cystic hygroma in the cervical region presents a great challenge to the anaesthesiologist. The anaesthetic difficulties are because of its extension, airway management, accidental extubation, postoperative respiratory obstruction and coexisting anomalies. A key to proper management of such patients is direct communication between the surgeon and anaesthesiologist.

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