ANESTHESIA MANAGEMENT OF CYSTIC HYGROMA IN A CHILD: A CHALLENGE
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ABSTRACT: Cystic hygroma (CH) is a benign congenital malformation of the lymphatic system with incidence of 1/6000 live births mainly present in the neck region. It is common in pediatric age group but very rare in adult patients. Perioperative management of CH is a real challenge encountered by the anesthesiologist in view of the difficult airway management and postoperative respiratory complications. A teamwork approach is a key to the successful outcome. Here we report a case of CH in a two year old patient in which the external portion of the swelling was just the tip of an iceberg and had a huge extension intraorally which made the case even more challenging.

KEYWORDS: Cystic hygroma, pediatric, difficult airway, respiratory obstruction, elective ventilation.

INTRODUCTION: Cystic hygroma was first described by Wernher in 1843. It is a cystic lymphatic lesion which usually manifests at birth, with 90% patients being diagnosed before the age of 2 years.1,2 CH in 70-80% cases occur in the neck usually in the posterior cervical triangle.3 The remaining 20–30% occurs in the axilla, superior mediastinum, chest wall, mesentery, retroperitoneal region, pelvis and lower limbs.4 Anesthetic management of the airway is always difficult in neonates and young infants with large neck masses. Patients of CH are at risk for sudden complete airway occlusion resulting in hypoventilation and hypoxemia.5 Maintaining airway patency after induction, difficulty in intubation, perioperative dislodgement of tube and decision of extubation are the critical events in anesthesia management.

CASE REPORT: A two year old girl child presented with history of swelling in the neck since one year. She had difficulty in deglutition, disturbed sleep due to difficulty in breathing in supine position and recurrent respiratory tract infections since six months. She had no other comorbid conditions. On examination, patient was malnourished (weight 8kgs), pale and had stunted growth. Systemic examination was within normal limits. On local examination, she had a swelling in the left submandibular region measuring (6cmx4cm) as shown in figure 1.

Fig. 1: shows the image of CH in neck
On oral examination, mouth opening was adequate, Mallampatti grade (MPC) III, the swelling extended from the root of the oral cavity to the hard palate as shown in figure 2.

![Fig. 2: shows the intraoral extension of the tumor](image)

On evaluation, blood biochemistry was within normal limits except hemoglobin which was 8gm%. Chest X-ray and ECG were unremarkable. Ultrasound neck showed multiple enlarged liquefied lymph nodes measuring 4cmx3cm in left submandibular region. MRI neck revealed a large multiseptated cystic mass measuring 6cmx4cm (axial) and 5cmx3cm (sagittal) extending from left infratemporal region to the midpoint beneath the mandibular region, medially displacing the pharynx and larynx to right side and posteriorly displacing the left common carotid artery and internal jugular vein.

This case was worked up by a team of a pediatric, dental, ENT surgeon and the anesthesiologist. After thorough evaluation, patient was posted for excision of CH under general anesthesia.

In this case, the problems anticipated were that of maintaining a patent airway, securing it with an endotracheal tube, intraoperative blood loss because of major blood vessels in the vicinity and postoperative laryngeal edema.

Two 22G iv cannulae were secured. Patient was premedicated with IV atropine 0.02mg/kg, IV. ondansetron 0.1mg/kg and IV. hydrocortisone 25 mg. Patient connected to multipara monitor. In view of the problems anticipated we preferred to maintain the spontaneous respiration at the time of induction. Patient was induced with oxygen, nitrous oxide and sevoflurane. After induction laryngoscopy was done and vocal cords were visualized with difficulty and sprayed with 1% lignocaine. A 3.5mm uncuffed endotracheal tube could be passed. The correct placement of the tube was confirmed by checking the bilateral air entry.

Oral packing was done thoroughly. Patient was then maintained on oxygen, nitrous oxide, sevoflurane and IV. Vecuronium on controlled ventilation. IV. midazolam 0.02 mg/kg and IV. fentanyl 1µg/kg was administered. The tumor was excised completely and there was a blood loss of 100ml. Urine output was 25 ml. The duration of surgery was four hours. Patient was hemodynamically stable intraoperatively. In view of anticipated postoperative airway edema she was electively ventilated for 24 hours. After fulfilling the extubation criteria, patient was extubated successfully. After extubation there were no signs of laryngeal edema or airway obstruction.

**DISCUSSION:** CH or lymphangiomas are believed to occur as a result of the failure of establishment of appropriate connection to the normally present lymphatic channels and are usually encountered at
birth or in early infancy and may present with obstructed labour. It may be associated with Turner syndrome, Noonan syndrome, trisomies 13, 18, 21, fetal alcohol syndrome, chromosomal aneuploidy, cardiac anomalies and fetal hydrops.

The most important sign is the presence of a swelling followed by interference with normal breathing and swallowing being second and third symptoms to appear. Significant differences exist between airways of the neonate and the adult. Pediatric age group are more prone to develop hypoxia, it is always safe and also recommended to limit the intubation duration to less than 20 seconds. The incidence of failed intubation with inability to perform mask ventilation may be higher among pediatric age group due to their peculiar airway anatomy and cardio-respiratory physiology.

The most important step in anesthetic management of CH is the provision of safe and secure airway to avoid hypoxia, as most anesthetic mishaps result from hypoxia as a result of airway problems. It becomes mandatory to keep the difficult intubation cart ready like stylet, bougie, intubating LMA, flexible fiberoptic bronchoscope, stand by tracheostomy. The use of fiberoptic bronchoscope for intubation may be helpful to tackle such a case of anticipated difficult intubation.

It would not be beneficial in present case because the tube used by us was 3.5mm uncuffed and smaller bronchoscopes compound the problem as they do not have good directional and suctional ability. In our case as there was intraoral extension, intubation was anticipated to be difficult, and so the patient was induced with inhalational anesthesia and maintained on spontaneous ventilation.

After securing the airway, accidental extubation of the endotracheal tube or endobronchial intubation is common and this mandates vigilance. In the present case owing to the displacement of major vessels in the neck, blood loss was a possibility. 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. In our case the patient was electively ventilated in order to avoid post extubation complications.

CONCLUSION: Cystic hygroma poses a unique challenge to the anesthesiologists. Failed intubation drill must be memorized and adopted by every anesthetist in case of failed intubation. In a nutshell an accurate assessment of airway, meticulous anesthesia plan would avoid falling into the dangerous situation of “cannot intubate and cannot ventilate” which may result in hypoxic cardiac arrest.

REFERENCES:
CASE REPORT


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