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One lung ventilation in left sided cystic hygroma: Anaesthesia challenges

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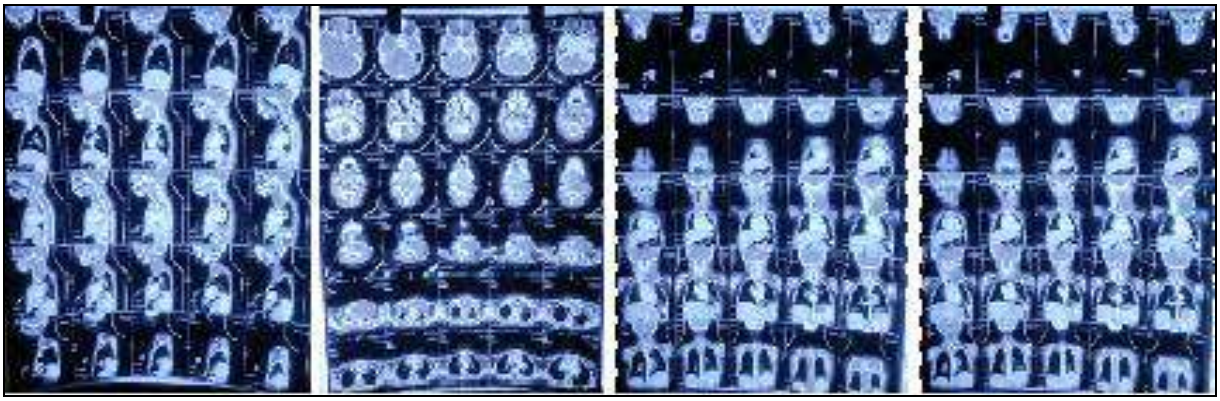
Abstract
Cystic hygroma [CH], also called as cavernous lymphangioma is a histologically benign congenital tumor of lymphatic origin. Its presence in the cervical region ,most common site [25%] poses multiple challenges to the anaesthetist which includes tumor extension in oral and thoracic cavity, restricted neck movements, airway management, haemorrhage, post-operative respiatory obstruction and coexisting anomalies [down syndrome, turner syndrome, and congenital cardiac defects]. The recommended treatment is surgical excision which can be achieved with no mortality and little morbidity. The advantages of video assisted thoracoscopic surgery (VATS) in children have led to its increased usage over the years. VATS, however requires an efficient technique for one lung ventilation. Today there is an increasing interest in developing the technique for lung isolation to meet the anatomic and physiologic variations in infants and children. Significant differences exist between airways of the neonate and the adult. Anaesthetic management of the airway is challenging in neonates and young infants with large neck mass like huge cystic hygroma because these patients are at risk for sudden complete airway occlusion resulting in hypoventilation and hypoxemia. We report a successful anaesthesia management in an infant undergoing video assisted thoracoscopic excision of cystic hygroma in left side of neck which was extending to anterior mediastinum under general anaesthesia.

Keywords: CH (Cystic Hygroma), VATS (Video assisted thoracoscopic surgery), one lung ventilation

Introduction
Cystic hygroma [CH], also called as cavernous lymphangioma is a histologically benign congenital tumor of lymphatic origin. Its presence in the cervical region, most common site [25%] poses multiple challenges to the anaesthetist which includes tumor extension in oral and thoracic cavity, restricted neck movements, airway management, haemorrhage, post-operative respiatory obstruction and coexisting anomalies [down syndrome, turner syndrome, and congenital cardiac defects]. We report a successful anaesthesia management in an infant undergoing video assisted thoracoscopic excision of cystic hygroma in left side of neck which was extending to anterior mediastinum under general anaesthesia. It posed many challenges which includes pediatric airway management, anterior mediastinal extension which may compress tracheobronchial tree after induction of anaesthesia and admistering one lung ventilation.



Case report

1. One yr old male with chief complaints of swelling in left side of neck since birth with no comorbidities, diagnosed as cystic hygroma posted for video assisted thoracoscopic excision [VATS]
2. Patient were examined vitally stable. Airway-Teeth intact, neck flexion and head extension adequate.
3. Patient was NBM 4 hours.
4. All basic monitors were attached.
5. Patient induced on sevoflurane and once airway was secured with 4.0 mm flexometallic endotracheal tube, intravenous inducing agent propofol 2mg per kg and muscle relaxant atracurium 0.5mg per kg was given.
6. Bilateral air entry was checked on auscultation. Then endotracheal tube was advanced in right bronchus with the help of bougie to isolate the left lung. Bilateral air entry was again checked on auscultation.
7. Surgery was lasted for 4 hours and uneventful
8. On 5th day postoperatively, patient discharged from hospital.

Discussion

Cystic hygroma is a benign tumor of lymphatic origin. The anaesthetist should have knowledge of extension of cyst into thoracic cavity. One should access the size and extend of neck swelling in order to formulate an appropriate plan of airway management.

Chest X ray is mandatory for all cases to exclude the presence of intrathoracic extension. Tumors in mediastinum require further investigations like angiography, CT scan, fluoroscopy.

The main objective in this case was securing the airway. Should can't ventilate, can't intubate situation arises, equipment for emergency airway access like cricothyroidotomy kits as well as a stand by surgeon to do a tracheostomy should be available.

Loss of muscle tone due to general anaesthesia aggravate the pressure effect of mass leading to airway obstruction and thus inhalational agent remain the preferred technique for management of pediatric airway. Hence we proceed with inhalational agent with primary aim of maintaining spontaneous ventilation and muscle relaxant is given only after confirming face mask ventilation.

Different options available for intubation are blind nasal intubation but it can be traumatic and can cause bleeding, Fibre optic intubation but it requires considerable amount of skill, tracheostomy under local anaesthesia which only should be used as a last resort.

To avoid and manage the potential airway complications, adequate knowledge of the nature of tumor and communication between the anaesthesiologist, otolaryngologist and pediatric surgeon as well as presence of another expert anesthesiologist are required.

Conclusion

General anaesthesia with one lung ventilation can be safely performed in infants undergoing VATS with through preparation of difficult airway cart and under expert anaesthetist guidance.

Conflict of Interest

Not available

Financial Support

Not available

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