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CORTICAL THYMOMA IN A CHILD : A RARE CASE REPORT

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ABSTRACT

Anterior mediastinal tumours can be very difficult to manage in peri-operative period more so in paediatric age group, literature provides cases of cardio-respiratory disasters and even death. We have come across a one year old female child who was apparently asymptomatic 6 months back, admitted in our hospital with complaints of cough, breathlessness, and increased work of breathing. Her past history revealed that she was misdiagnosed and treated repeatedly for pneumonia. This worsened her present pathology. On investigation, HRCT Thorax showed anterior mediastinal mass extending upto middle mediastinum and cranial aspect of heart. This child was posted for thoracotomy and excision of mediastinal mass. On pre-operative examination, child was febrile, anaemic, Respiratory rate was 52/min with decreased air entry on right side. Child was kept on regular nebulisation and continuous O2 supplementation. Administering anaesthesia to such a child was challenging as it requires an anticipation of respiratory and circulatory collapse. Presenting here this rare case, which we could manage with general anaesthesia supplemented with thoracic epidural anaesthesia. Complete surgical resection of tumour of size 16x8cm was possible with uneventful peri-operative course with effective post operative analgesia. Histopathology of tumour turned out to be cortical thymoma. Thymomas are neoplasms of anterior mediastinum and generally occur in adults. In children, they are rare with only 30-35 reported cases in literature.

INTRODUCTION

Tumours presenting in and around the mediastinal cavity are uncommon. These masses are a heterogenous collection of benign and malignant tumours and are usually designed as located in the anterior, middle or posterior mediastinum. Among these anterior neoplasms like thymoma are benign masses and they comprise of only 20-30% mediastinal masses in adults but only 1% in paediatric patients. Anterior mediastinal tumours can be very difficult to manage in perioperative period, as life threatening complications relating to compression of airways and vascular structures are exacerbated by general anaesthesia. The literature provides many incidences of cardiorespiratory disasters and even death, many of these publications relate to paediatric practices[(1)]. We report a case of anterior mediastinal mass in a one year old infant where the problems were magnified by small size of the patient and large size of the tumour, emphasizing the importance of immediate anticipation of problems and prompt treatment for better outcome of the patient.

CASE REPORT

The patient was one year old female weighing 6.5kg. She was born full term and admitted with complains of moderate cough with coryza and dyspnoea during feeds from birth, with on and off fever since six months. There was history of multiple hospital admissions for lower respiratory tract infections (LRTI) which was misdiagnosed and treated as pneumonia with antibiotics and nebulization with asthalin. On preanaesthetic examination, patient was tachypnoeic with respiratory rate of 55 per min. There was no air entry in right upper zone and there were conducted sounds and crepitations all over the chest. There was no deterioration of the patient in supine position as seen by his continued activity as well as ability to sleep. Clinically no signs of obstruction of superior venacava such as engorgement of veins of neck, right upper arm, chest wall and oedema of neck. On investigation x-ray chest showed gross widening of superior mediastinum with tumour adjacent to trachea.(Figure1)

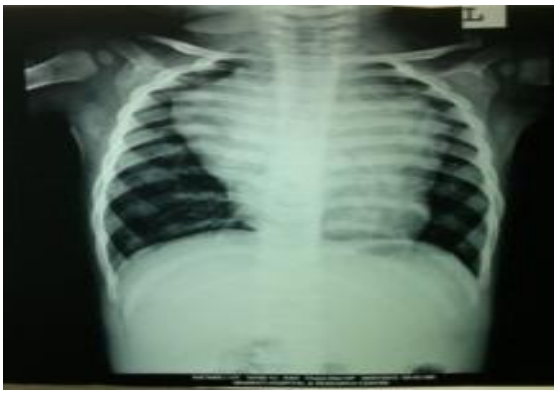

Figure 1:Chest x ray showing gross widening of superior mediastinum.

CT thorax suggested a well defined mass of 9.8*6.8*5.2cm in anterior mediastinum extending into middle mediastinum and draped over mediastinal vessels and cranial aspect of heart.(Figure2)

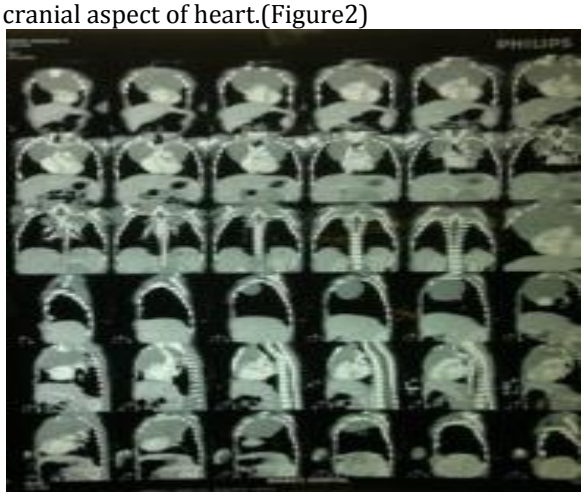

Figure2: CT thorax showing mass in anterior mediastinum

The child was posted for excision of tumour mass. SpO_2 on room air was 94-95% in pre op room in supine position. Preoperatively invasive monitoring was planned and right radial arterial line and internal jugular vein secured under local anaesthesia with sedation for intra arterial blood pressure monitoring and anticipating severe blood loss during procedure as tumour was extending to vital structures. Emergency cart and rigid brochoscopy was kept ready.

Premedication done with glycopyrrolate 0.01mg/kg. Monitors established, base line parameters noted in supine position. Sedation given with midazolam in titrated dose (0.02mg/kg) .With continuous oxygen supplementation observed for 5minutes, baby could maintain $Sp0_2$ 99-100% in supine position Induction with Sevoflurane at 4-6% and titrated doses of propofol. Intubated with endotracheal tube number 4.5 portex uncuffed under deep planes anaesthesia on spontaneous respiration

There was no significant haemodynamic and airway pressure changes observed after intubation, hence decided to give muscle relaxant that is vecuronium 0.08mg/kg. IPPV continued with tidal volume 8-10 ml/kg on JacksonRees circuit. Thoracic epidural catheterization done in lateral position at T7- T8 space with loss of resistance technique using normal saline. Intraoperative analgesia provided with 0.125% bupivacaine 2.5cc with 2.5mic fentanyl. Thoracic epidural technique provides optimal operating conditions,including muscle relaxation and facilitates postoperative recovery by providing maximal analgesia[2].(Figure3)

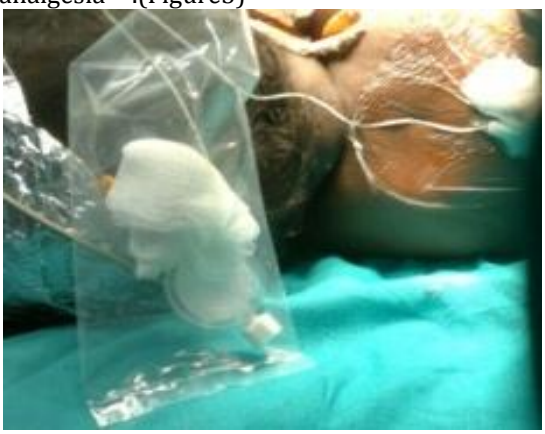

Figure3: Thoracic epidural catheter in situ

Intraoperatively HR was in range of 110- 120/min, BP range was 80 – 96/ 54- 64 mmhg, SpO_2, $EtCO_2$, and ECG remained within normal limits.CVP was maintained between 5- 8 cm of h_2o. During operative procedure chest was opened with left thoracotomy and tumour was visualised. During dissection of tumour, on two occasions surgery had to be stopped temporarily as patient developed hypotension with bradycardia (50-60 mmhg , 60-70 /min) may be due to compression of major vessels while handling of the large tumour. This was managed with supplementation of 100% oxygen with crystalloids and inj.glycopyrrolate was given in a dose of 0.01mg/kg. Did not require any ionotropic support. Complete resection of tumour weighing 230gm was possible(Figure4) with intraoperative blood loss 30-40ml which was replaced with same amount of blood.

Figure4: Mass weighing 230gm

After surgery and reversal of neuromuscular blockade,the SpO_2 and End tidal CO_2 were maintained. The child appeared to be quite, comfortable and pain free. Baby was extubated uneventfully with standby of emergency cart, rigid bronchoscope and tracheostomy tray with paediatric surgeon. Baby was observed for half an hour on the operation theatre table, then shifted to paediatirc intensive care unit with oxygen supplementation. Post-operative analgesia was provided with 2.5ml of 0.125% bupivacaine with 2.5mic fentanyl 6 hourly for three days. On post operative day three histopathology revealed to be Cortical Thymoma

DISCUSSION

Mediastinal tumours can compress the major airway[3]. In infants and small children the airway are more compressible, therefore small decrease in airway diameter cause relatively large decrease in tracheal lumen and

therefore increases airway resistance also[4]. However sometimes even large masses can present without any clinical symptoms of airway compression, but may develop airway obstruction after induction of general anaesthesia which may be due to relaxation of tracheal and bronchial smooth muscle, decrease in functional residual capacity and loss of spontaneous diaphragmatic movements[3]. Therefore airway mangement in patients with large mediastinal masses with or without airway obstruction poses a challenge to the anaesthesiologist. Preserving of spontaneous respiration during induction appears to be important in these patient. After reviewing the literature it was found that Dr. Lakshmi vas et al paediatric anaesthesia 1999, managed a similar case with anaesthesia at a very light plane with nerve blocks for securing the airway and epidural analgesia for surgery also emphasizes the importance of spontaneous respiration till mobilization of tumour mass[4]. Dr. Gregory B Hammer pediatric anaesthesia 2004, described that performing tracheal intubation under deep inhalational anaesthesia without use of muscle relaxant and IPPV may result in a more transpulmonary pressure gradient and improved flow through conducting airways. He also mentioned that decrease in chest wall tone associated with muscle relaxation is thought to increase risk of severe airway compression, In such situations of tracheal and bronchial collapse under anaesthesia rigid bronchoscopy may be life saving[5], which was kept ready in our case.

However Dr.Vishnu Datt, Dr.Deepak K. Tempe IJA 2005 mentioned that, if there is no evidence of airway obstruction, inhalational induction with volatile agents such as sevoflurane/halothane or titrating doses of i.v propofol or ketamine is preffered. After documentation of airway patency by bag mask ventilation a short acting muscle relaxant can be used to facilitate endotracheal intubation and if IPPV can be achieved without problem long acting muscle relaxant can be given. In our case we followed same method except we preffered to intubate on spontaneous respiration to be on safer side. After confirmation of adequate IPPV without any disturbance in airway pressure long acting muscle relaxant was given[3].

CONCLUSION

Airway obstruction is the most common and feared complication in patients with anterior mediastinal mass under anaesthesia with use of muscle relaxant and IPPV. These symptomatic or asymptomatic patients can develop fatal airway obstruction[3]. Therefore preserving of spontaneous ventilation should be preffered during induction of anaesthesia and to restore airway and oxygenation is the key success[3]. At the same time chances of cardiovascular collapse should not be ignored.

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