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Letter to Editor

Challenging airway complicated with esophageal perforation: Concerns for anaesthesiologist

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Dear Editor,

We are presenting the critical airway management of a 10-year-old child with a retropharyngeal abscess. Retropharyngeal abscess (RPA) is a neck infection in the space between the pre-vertebral fascia and constrictor muscles.[1] Trauma to the posterior pharynx is a common etiology.[2] Patients with airway compromise require immediate surgical intervention. Awake tracheostomy is a life-saving emergency procedure in children with respiratory distress due to difficult anatomy.

A 10-year-old male child weighing 16 kg arrived at the emergency room complaining of a fever with chill and rigor, as well as trouble breathing and swallowing for three days. Positive history of a foreign body (chicken bone) in the throat, that was removed 14 days ago under local anaesthesia.

An urgent contrast-enhanced computer tomography (CECT) showed a large peripherally enhancing collection showing air-fluid level in the retropharyngeal space (4.2 x 5.4 x 11 cm) extending from C2 to D3 level. Anteriorly causing mass effect over the larynx and abutting epiglottis. Laterally abutting bilateral common carotid arteries and compressing bilateral internal jugular veins. Inferiorly reaching up to the arch of the aorta. Communicating with distal cervical esophagus at C7- D1 level (Figure 1).

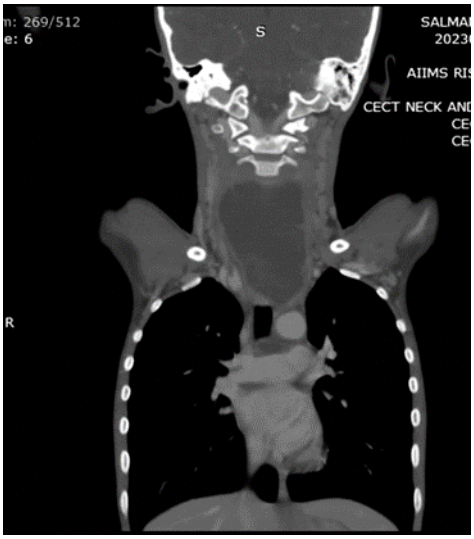

Figure 1: CT images showing retropharyngeal abscess with air-fluid level

On examination, child had inspiratory stridor and use of accessory muscles with intercostal retractions. Auscultation revealed inspiratory stridor, bilateral crepitations, with equal air entry. Rest of the examination was unremarkable. Mouth opening and Modified Mallampati score was 2. Vitals were, heart rate 135/min, blood pressure 116/86 mm Hg, respiratory rate 26/ min, oxygen saturation (SpO2)- 97% on

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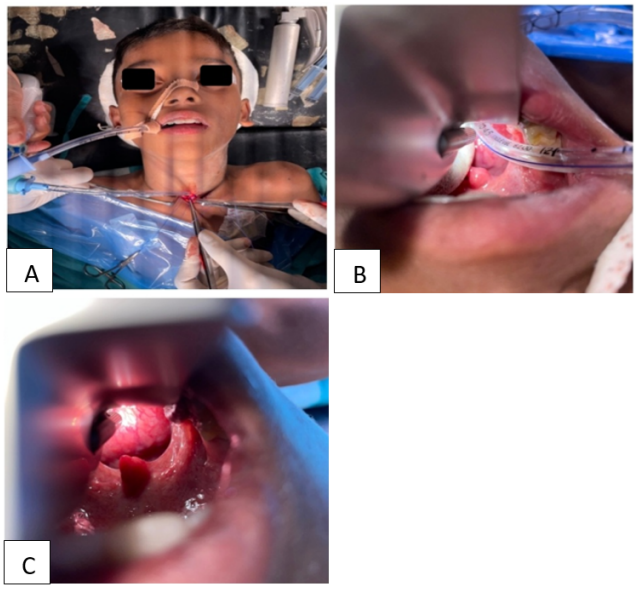

Figure 2: A): Child intubated with 4.5 mm cuffed endotracheal tube and proceeded with tracheostomy- secured with 5 mm cuffed endotracheal tube; **B)**: Endotracheal tube secured and retropharyngeal abscess on laryngoscopy; **C**): Endotracheal tube secured and retropharyngeal abscess on laryngoscopy

nasal prongs @ 2 L/m, temperature 103°F.

The child was planned for emergency tracheostomy and incision and drainage because of respiratory distress. We determined that induction of general anaesthesia through either inhalational or intravenous (IV) route would not be appropriate, due to the dynamic nature of the lesion and communication with the esophagus which may lead to complete airway obstruction, and cannot ventilate, cannot intubate (CVCI) scenario. Therefore, an awake tracheostomy was decided as the initial strategy. After discussing airway management plans, anaesthesiology, and otorhinolaryngology teams ensured equipment availability and assigned roles to all team members in case the initial technique failed.

The child and parents were explained about the awake tracheostomy procedure, after which patient was shifted into the operating room with supplemental oxygen. Nebulization with 4% lignocaine was done, and IV access was secured with 22G cannula. American Society of Anesthesiologists (ASA) standard monitors were attached showing Spo2 95% with supplemental oxygen. Local anaesthesia infiltration at the front of neck was done with 10 ml of lidocaine 2% in 1:2,00,000 adrenaline. Since the child was not cooperative for tracheostomy despite counseling, inhalational induction done with sevoflurane in 100% oxygen while maintaining spontaneous respiration. Tracheostomy was performed but capnography waveform and breath sounds on auscultation were not observed, and fall in SpO2 (85%) was noticed. Supplemental oxygen failed to increase saturation value, so direct laryngoscopy was performed and trachea was finally intubated with a 4.5mm cuffed endotracheal tube (ETT) with great difficulty. Capnography waveform was observed, and bilateral air entry was confirmed with auscultation. The child was ventilated and SpO2 picked up to 99%. Depth of anaesthesia maintained with sevoflurane and oxygen without muscle relaxant. Tracheostomy was done with 5 mm cuffed ETT and position was confirmed. Incision and drainage of the abscess was done through the intra-oral route. The ETT was changed with 5 mm cuffed tracheostomy tube. Oral suction was done thoroughly in deep plane of anaesthesia (Figure 2). Child was shifted when fully awake and maintaining SpO2- 97% on room air. Postoperative chest X-ray was normal, and the child was comfortable in the postoperative period.

1. Discussion

Retropharyngeal abscess is commonly seen in children aged 6 months to 6 years.[3] Causes include upper respiratory tract infections, foreign bodies and penetrating trauma (following endoscopy, intubation and dental procedures). Clinical features may be non-specific but may be life-threatening airway obstruction.

Management of the abscess is mainly by drainage, maybe by intraoral route when it is limited to the upper retropharyngeal space, external route is used when the mass extends below the hyoid bone and transthoracic route is used when the mass spreads below carina.

Front of neck airway has been recommended by Association of Pediatric Anesthetists, Difficult Airway Society, and All India Difficult Airway Association in loss of airway scenario in case of non-availability of otorhinolaryngologist.[4,5]

Sedation may lead to airway obstruction due to relaxation of the pharyngeal muscles. The preferred technique is inhalational induction maintaining spontaneous respiration and intubation of the trachea by an expert taking precautions not to rupture the abscess. Cuffed endotracheal tube, or throat packing must be done to avoid aspiration of the pus.[6]

Awake tracheostomy is indicated for acute airway obstruction when intubation and cricothyrotomy have failed or are inappropriate.[7] To avoid a 'cannot intubate, cannot ventilate' situation, awake tracheostomy can be explored in children, keeping in mind that abrupt loss of airway during tracheostomy necessitates an immediate response to secure a definitive airway. To conclude, preparedness for emergency difficult airway and team approach are paramount in such cases to manage unforeseen emergencies.

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