

**PAEDIATRIC RETROPHARYNGEAL ABSCESS: CASE REPORT WITH A GHANAIAN EXPERIENCE**

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**ABSTRACT**

Retropharyngeal abscess (RPA) with varying degrees of airway obstruction are relatively common at our centre in West Africa. Because of the resource limitations at our institution, including access to CT imaging and fiber-optic endoscopy, the approach to securing the airway differs from the management at centers in other places. We present a case of a child who presented in stridor with neck swelling. A diagnosis of RPA was made, an emergency tracheostomy performed after failed endotracheal intubation and incision and drainage subsequently done. We also discuss our experience over one year.

**KEYWORDS:** Retropharyngeal abscess; retropharyngeal space; stridor; prevertebral shadow; tracheostomy.

**INTRODUCTION**

The retropharyngeal space is a potential space that lies between the buccopharyngeal fascia and the pre vertebral fascia. Lying behind the pharynx, it extends from the base of skull superiorly to the tracheal bifurcation inferiorly in the mediastinum, with the carotid sheaths lying laterally.<sup>[1]</sup> A fibrous raphe divides the space into two lateral compartments. The space contains lymph nodes, among them, the nodes of Rouviere, which drain the nasopharynx, nasal cavities and the oropharynx. Infections from these locations thus easily spread to this space with consequent mediastinitis and its dire complications. Infection in the retropharyngeal space arises either from infection spreading from a contiguous area or from direct inoculation as a result of penetrating trauma. The retropharyngeal lymph nodes mostly disappear after 4 to 5 years of age.

Patients with retropharyngeal abscesses mostly present with fever, neck pain or swelling and sometimes stridor.<sup>[2]</sup> Oropharyngeal examination would also show a bulge on the posterior pharyngeal wall. Paediatric patients present with retropharyngeal abscesses usually following acute upper respiratory tract infections which spread to the retropharyngeal lymph nodes, suppuration of which lead to abscess formation. Thus, infections like pharyngitis, tonsillitis, adenoiditis, otitis media, sinusitis and salivary adenitis, as well as nasal infections can lead to suppuration in the retropharyngeal space.

Osteomyelitis of the spine can also contribute. Penetrating trauma, which in children can occur when there is a fall whilst the child has a sharp object in the mouth also leads to direct inoculation of the site with bacteria leading to infection. Other traumatic causes of RPA include foreign bodies in the throat, e.g. fish bones, and iatrogenic causes like instrumentation with laryngoscopes, endotracheal intubation, surgery, endoscopes, feeding tube placements and dental procedures. In adults, retropharyngeal abscesses may result from tuberculosis and are common in immunosuppressed individuals.<sup>[1]</sup> Retropharyngeal abscess tends to be more common in boys than girls.<sup>[2]</sup>

The complications from retropharyngeal abscesses are serious and may pose a danger to the life of the child.<sup>[2]</sup> Serious side effects result from the mass effect of the abscess, which is usually occluding the upper aero digestive tract leading to airway obstruction, and difficulty with feeding. Rupture of the abscess with aspiration into the airway can lead to asphyxiation, pneumoniae and lung abscesses.<sup>[3]</sup> Spread into the mediastinum can lead to mediastinitis, pericarditis, pneumothorax, pleuritic empyema and bronchial erosion. Laterally, carotid artery rupture and jugular venous thrombosis can result from spread of the infection. Posterior spread can lead to osteomyelitis and spinal column erosion with subsequent spinal cord injury and

subluxation of the vertebrae. Necrotizing fasciitis, sepsis and even death can result.

In one year, i.e. from June 2016 to May 2017, at our centre five suspected cases of RPA have been seen. 3 cases were true abscesses whilst 2 were discharged with a diagnosis of retropharyngeal cellulitis. All 3 cases of abscesses were managed with emergency tracheostomy and transoral drainage of abscess whilst the cases of cellulitis were treated with antibiotics without surgery. One of the abscesses died on the theatre table due to cardiac arrest. Attempt at resuscitation failed. In a study in Northern Ghana, 13 cases were seen over a 4-year period.<sup>[4]</sup>

### CASE PRESENTATION

A sixteen-month old African girl presented to the emergency unit of our facility as a referral case from a nearby health facility. She presented with a week's history of a gradually enlarging left sided neck mass, a three-day history of difficulty in breathing and two days of fever. On the day of presentation, dyspnea was now associated with noisy breathing. Mother could not confirm preceding rhinorrhea, nasal obstruction, cough, sore throat or any other manifestations of an Upper respiratory tract infection. Child had however been feeding poorly as the neck mass enlarged.

On examination, she appeared acutely ill in severe respiratory distress with stertor. Oxygen saturation was 84 percent on room air; rising to 92 percent after administration of oxygen by nasal prongs. She was drooling and restless with neck held erect and rigid. There was a firm left sided neck swelling with differential warmth. Tenderness could not be assessed due to the irritable state of child. A complete oropharyngeal exam was unsuccessful.

An impression of acute upper airway obstruction secondary to a retropharyngeal abscess was made. Due to the critical state of the child at presentation, she was prepared immediately for theatre where an emergency tracheostomy was done following an unsuccessful endotracheal intubation followed by per oral incision and drainage of the retropharyngeal abscess. Intravenous ceftriaxone and clindamycin were started prior to the procedure.

Intraoperative findings in the theatre included a prominent retropharyngeal bulge, which yielded about 60mls of pus after incision and drainage.

Intravenous antibiotics were continued for six days. Oral feeding began on the second day post operatively.

Tracheostomy decannulation was performed on post-operative day 4 and oral medications (cefuroxime and clindamycin) started. The patient was discharged home 2 days later. Follow up 5 weeks later showed a well-child.

### DISCUSSION

We describe the case of a retropharyngeal abscess in a toddler presenting with upper airway obstruction and stridor. As frequently happens, this child presented with a neck swelling which gradually increased in size leading to stridor. Some children may present with non-specific signs including irritability and poor feeding, thus a high index of suspicion is necessary. The presentation of RPA can be subtle thus delaying diagnosis. Some authors have thus described it as '*the epiglottitis of the new millennium*'.<sup>[5]</sup>

Although the mother did not acknowledge the presence of a preceding upper respiratory tract, purulent nasal discharge found on anterior rhinoscopy was evident of the presence of such a pathologic process. This was likely to have been the inciting factor leading to the disease. While somewhat atypical, in this child, fever had been recognized late in the disease process, occurring five days after neck swelling and even after the onset of dyspnea.

A tracheostomy had been necessary to secure the airway, which was severely compromised before the drainage of the abscess via the oral route could be done.

Following drainage, recovery of the child, which was initially slow, hastened after the second post operative day, leading to discharge from the hospital on the seventh post-operative day.

At our centre, five cases of retropharyngeal abscess causing some degree of airway compromise were seen in one year. This is similar to 4.5 cases per year found in Pittsburgh, USA whilst lower figures of 1.7 per year at Denver, USA and 1 per year in Australia were reported.<sup>[6-8]</sup> However, Craig et al in Utah, USA, reported 13 cases per year.<sup>[5]</sup> Many factors contribute to this variation in incidence.

This case series highlights some of the challenges associated with the evaluation and management of retropharyngeal abscesses in a resource limited healthcare delivery system. First, initial imaging studies at our centre may vary from larger institutions in more developed countries. Soft tissue lateral neck x-ray is accessible and has an 80% sensitivity for diagnosing RPA. Features of widened prevertebral soft tissue shadow as shown in Figure 1 below, which is more than 50% of the width of the corresponding vertebral body and loss of cervical lordosis, are findings on the lateral soft tissue neck x-ray suggestive of a RPA. There may also be a gas/air-fluid level in the prevertebral shadow. It is important that patients are well positioned well when taking the lateral soft tissue neck x-ray i.e. in full neck extension, true lateral orientation and full inspiration so that the prevertebral shadow is not falsely thickened. CT scan has a higher sensitivity of 92% but due to expense, it is typically not an option at our institution.<sup>[2]</sup>



**Fig 1: A lateral neck x-ray of one of our patients with RPA showing a widened prevertebral shadow.**

Treatment of retropharyngeal abscess includes antibiotics and incision and drainage when indicated, either transorally or externally.<sup>[1,9]</sup> Some authors have used needle aspiration to manage RPA.<sup>[3]</sup> Endotracheal intubation or emergency tracheostomy may be necessary in cases as ours where there is airway compromise.<sup>[2]</sup> Smaller abscesses and retropharyngeal cellulitis/phlegmon cases can be treated with antibiotics only, as was done in some of our patients.<sup>[5]</sup> In cases of tuberculous retropharyngeal abscess, treatment may only require antituberculous medications.<sup>[10]</sup>

Achieving a secure airway in these patients is challenging, as the laryngopharynx is edematous with trismus and restricted mouth opening often making visualization difficult. Some authors have suggested awake intubation since mask ventilation is not always guaranteed after IV induction. Other authors have also suggested fiberoptic intubation.<sup>[3]</sup> Use of muscle relaxants can lead to complete loss of the airway if mask ventilation is not successful, thus inhalational induction with gentle laryngoscopy may be best according to Afolabi *et al.*<sup>[11]</sup> We realize that these cases are best done with experienced anesthetists and emergency tracheostomy has been safe. In areas with a flexible endoscope, assessing the airway prior to induction of anesthesia may help guide the anesthetic approach. However, if the airway cannot be assessed with a fiberoptic endoscope, extreme caution should be exercised when proceeding with anesthesia induction.

The challenges in the immediate post-operative period include edema at the site of drainage and laryngospasm.<sup>[11]</sup> Thus extubation or decannulation of these patients might have to be delayed. These patients

also tend to be septic and dehydrated, thus making post-operative recovery difficult. This might explain why our patient's recovery was slow initially in the post-operative period.

## CONCLUSION

Retropharyngeal abscess with varying degrees of airway obstruction are relatively common at our centre in West Africa. Because of the resource limitations at our institution, including access to CT imaging and fiberoptic endoscopy, the approach to securing the airway differs from the management at centers in developed health care systems.

## CONSENT

Consent for this article was obtained from the parents of this child and a copy of this is available for review by the editor.

## AUTHOR CONTRIBUTIONS

GAQ, PAT, NAH, RBM, DC and JDM formed the operating team for the surgery in the case report. All authors contributed to the design and write-up of the manuscript.

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## CONFLICT OF INTEREST

No conflict of interest declared.

## REFERENCES

1. A. Harkani, R. Hassani, T. Ziad, *et al.*, "Retropharyngeal Abscess in Adults: Five Case Reports and Review of the Literature," *The Scientific World JOURNAL*, 11: Article ID 915163, 7 pages, 2011. doi:10.1100/2011/915163.
2. Ibrahim MIS, Mohd NKN, Mohamad A, Shukri NM. Sudden rupture of an acute retropharyngeal abscess in children; A grave lesson. *Egyptian Journal of Ear*, 2016; 17(2): 119-121(3).
3. Kulkarni KR, Chaurasia BR. Difficult airway in a child with retropharyngeal abscess. *Anaesth Pain & Intensive Care*, 2014; 18(3): 285-88.
4. Adjeso T, Damah MC, Murphy JP. Emergency Ear, Nose and Throat Admissions in Northern Ghana. *Postgraduate Medical Journal of Ghana*, September 2017; 6(2).
5. Craig FW<sup>1</sup>, Schunk JE. Retropharyngeal abscess in children: clinical presentation, utility of imaging, and current management. *Pediatrics*, 2003 Jun; 111(6 Pt 1): 1394-8.

6. Ungkanont K, Yellon RF, Weissman JL, Casselbrant ML, Gonzalez-Valdepena H. Head and neck space infections in infants and children. *Otolaryngol Head Neck Surg*, 1995; 112: 375-382.
7. Morrison JE, Pashley NRT. Retropharyngeal abscesses in children: a 10-year review. *Pediatr Emerg Care*, 1988; 4: 9–11.
8. Coulthard M, Isaacs D. Retropharyngeal abscess. *Arch Dis Child*, 1991; 66: 1227– 1230.
9. Behari S, Nayak SR, Bhargava V, Banerji D, Chhabra DK, Jain VK. Craniocervical tuberculosis: Protocol of surgical management. *Neurosurgery*, 2003; 52: 72–81. [PubMed].
10. Ekka M, Sinha S. Retropharyngeal abscess as a rare presentation of pulmonary tuberculosis. *Lung India*, 2015 May-Jun; 32(3): 262–264. doi: 10.4103/0970-2113.156247.
11. Afolabi AO, Fadare JO, Oyewole EO, Ogah SA. Fish bone foreign body presenting with an acute fulminating retropharyngeal abscess in a resource-challenged center: a case report. *J Med Case Rep.*, 2011; 5: 165. [PubMed].