

Original Article



Successful Treatment of a Toddler with Significant Airway Obstruction and Septic Shock Due to a Pharyngeal Abscess: A Case Report

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Abstract:

We report a rare case of posterior pharyngeal wall abscess in a pediatric patient presenting with severe airway obstruction and septic shock. A girl admitted with oral ulcers and fever developed respiratory distress, and a CT scan on day six revealed a retropharyngeal abscess causing airway obstruction and septic shock. Emergency surgery successfully drained the abscess, avoiding major invasive procedures like tracheotomy. The patient recovered fully, extubated on day nine and discharged on day fifteen. This case highlights the critical importance of improving treatment success rates for pediatric patients with posterior pharyngeal wall abscesses, emphasizing the need for heightened awareness and proactive management strategies among clinicians.

Keywords: Abscess in the posterior pharyngeal wall ; Severe blockage of the airways ; Septic shock, Toddlers

1 Introduction

Posterior pharyngeal abscess is a rare but potentially fatal infection characterized by pus accumulation behind the throat, causing variable airway obstruction and potentially leading to septic shock and severe morbidity¹. While less common in children than adults², it can still be life-threatening. Incidence peaks in autumn and winter³, and is influenced by antibiotic use⁴ and immunological status⁵. This study examines a case of an about one-year-old child with retropharyngeal abscess causing severe airway obstruction and septic shock, exploring its characteristics, treatment, risk factors, and outcomes. The findings offer valuable insights for clinicians, researchers, and public health officials in developing strategies for early detection, prevention, and management of this condition.

Case Summary

We report a rare case of posterior pharyngeal wall abscess in an about one-year-old child, presenting with severe airway obstruction and septic shock. Chief complaint: one-week fever and recent onset of mouth ulcers.

One week ago, the child developed a fever up to 39°C without any obvious triggers, but she had no coughing, vomiting, abdominal pain, or diarrhea. The parents administered oral medications (cephalosporins, ibuprofen) for three days, but the fever went up reaching 39.5°C on October 23, 2023. The child received intravenous anti-infective (fosfomycin) and anti-inflammatory (dexamethasone) treatments for two days, but she finally developed oral ulcers and gingival bleeding. The child was admitted to our hospital for "acute gingivitis" after an outpatient visit.

On the first day, a comprehensive laboratory examination was performed (Figure 1), and

symptomatic treatments were initiated, including ceftriaxone for infection, fever reduction, and

local treatments to promote oral mucosal healing.

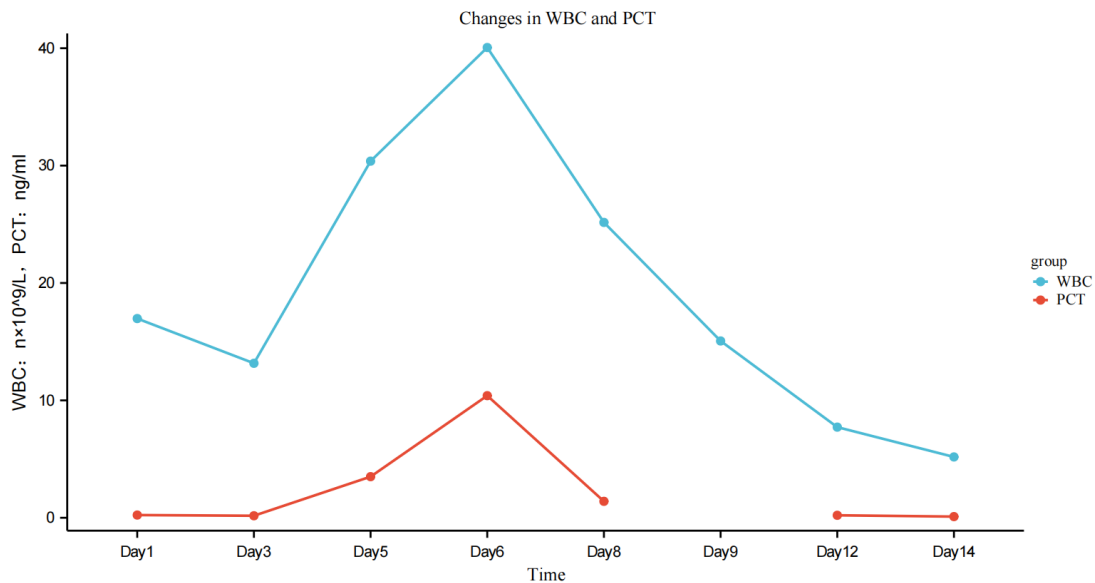


Figure 1: Changes in PCT and WBC levels during hospitalization of the patient.

On Day 2, the child's temperature decreased to 37.8°C, but the oral ulcers remained painful. The initial treatment continued.

By Day 3, the fever persisted (37.9°C), and the child experienced severe pain and inability to eat. The treatment plan remained unchanged.

On Day 4, the fever spiked to 38.6°C, and the child reported worsening mouth ulcers and sore throat. Examination revealed significant pharyngeal congestion. Sputum and blood cultures were collected, and follow-up blood tests were

ordered.

On Day 5, the child had a high fever (39°C) with a white blood cell count of $30.38 \times 10^9/L$, indicating uncontrolled infection. Meropenem replaced ceftriaxone for enhanced antimicrobial therapy.

On Day 6, the child's condition deteriorated with a fever of 39.5°C, respiratory distress, and difficulty swallowing. CT scans revealed severe airway obstruction and a retropharyngeal abscess (Figure 2).



Figure 2: In the cervical CT of the patient, it suggests the presence of a retropharyngeal abscess along with severe airway obstruction.

Attempts to establish an artificial airway via laryngoscopy and fiberoptic bronchoscopy failed

due to abscess size. A multidisciplinary meeting was convened to develop a treatment strategy.

On Day 6, an emergency procedure was performed in the operating room:

1. Preoxygenation with 100% oxygen for 2-3 minutes.
2. Inhalation of sevoflurane (2%-8%) to achieve anesthesia.
3. Abscess aspiration using a 20 ml syringe and 23G needle, yielding approximately 20 ml of pus.
4. Orotracheal intubation established after abscess drainage.
5. Expanded incision and drainage of the abscesses in the posterior pharyngeal wall and parapharyngeal space.

The patient was transferred to the ICU for monitoring. Blood cultures identified *Streptococcus pyogenes*, which prompted the addition of linezolid to the antimicrobial regimen.

On Day 9, the child's fever was resolved, and CT showed significant reduction in abscess size, allowing for successful extubation.

On Day 10, the child was transferred from the ICU to the pediatric ward for continued supportive care.

The child was fully recovered and discharged on Day 15.

Discussion

Posterior pharyngeal abscesses are infectious conditions typically presenting with acute sore throat and dysphagia ⁶. Despite clinical experience, the pathophysiology remains incompletely understood. Our research suggests that retropharyngeal abscess development is influenced by infection origin, immune status, and anatomical factors. Infections may arise from bacteria, viruses, or fungi entering through mucosal damage, causing cellular injury and abscess formation ⁷. Patients with impaired immune responses, such as those on immunosuppressive drugs or with immunodeficiencies, are more susceptible due to weakened infection-fighting abilities ⁸. Local inflammation is a key driver, with abscesses forming from tissue edema, congestion, and exudation in response to infection or injury. Anatomical abnormalities in the posterior pharyngeal wall, such as obstructions or retained

food debris, can also facilitate abscess development ⁹.

Toddlers often cannot express symptoms or cooperate during treatment, leading to misdiagnosis. In this case, a retropharyngeal abscess was missed initially due to its hidden location, causing severe airway obstruction and septic shock. Attempts to create an artificial airway via the mouth failed due to abscess extent and associated risks, including rupture and bleeding. Emergency tracheostomy is recommended for airway blockage ¹⁰, but it carries significant risks, especially in toddlers ¹¹. Our team performed percutaneous abscess aspiration and oral tracheal intubation, followed by incision and drainage. The child improved and was discharged after antibiotic treatment, with minimal trauma and a successful airway establishment.

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Conflict-of-interest Statement

All the authors declare no conflict of interest.

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