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A Case Report: Retropharyngeal Abscess in Children

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A B S T R A C T

Introduction. Retropharyngeal abscess (RPA) is a deep neck infection that predominantly affects young children due to the presence of retropharyngeal lymph nodes. It is a potentially life-threatening condition characterized by fever, neck pain, and dysphagia, which can rapidly progress to airway obstruction and systemic complications if not promptly diagnosed and treated. This case report highlights the presentation, diagnosis, and management of a retropharyngeal abscess in a pediatric patient.

Case Presentation. A 5-year-old male presented to the pediatric emergency department with a 3-day history of fever, neck pain, and difficulty swallowing. Physical examination revealed neck stiffness, limited range of motion, a muffled voice, and deviation of the uvula. Laboratory tests showed elevated white blood cell count and C-reactive protein levels. A lateral neck radiograph indicated soft tissue swelling, and a contrast-enhanced CT scan confirmed a hypodense lesion with rim enhancement in the retropharyngeal space, consistent with an abscess. The patient was started on intravenous antibiotics and underwent surgical drainage via a transoral approach. Cultures grew Group A Streptococcus, and the patient completed a 10-day course of tailored antibiotics. Postoperative recovery was uneventful, with significant clinical improvement and resolution of symptoms at follow-up.

Conclusion. This case report underscores the importance of early recognition and prompt intervention in managing retropharyngeal abscesses in children. Combined medical and surgical treatment is essential to prevent severe complications and ensure favorable outcomes. The successful management of this case highlights the need for a multidisciplinary approach and the critical role of imaging in the diagnosis and treatment planning of RPAs.

Keywords: Retropharyngeal Abscess, Overview, Children

Introduction

Retropharyngeal abscess (RPA) is a deep neck infection that primarily affects children and can lead to significant morbidity if not promptly diagnosed and treated. This literature review explores the etiology, pathophysiology, clinical presentation, diagnostic modalities, management strategies, and outcomes of RPAs, providing a comprehensive overview based on current research and clinical guidelines.[1]

Retropharyngeal abscesses are commonly seen in children under the age of six, with a slight male predominance. The incidence of RPAs has decreased with the widespread use of antibiotics and vaccinations, particularly the Haemophilus influenzae type b (Hib) vaccine. However, they still pose significant clinical challenges due to their potential for rapid progression and severe complications. The retropharyngeal space, located between the pharyngeal wall and the prevertebral fascia, contains lymph nodes that can become infected following upper respiratory tract infections. The infection can spread from adjacent structures, leading to lymphadenitis, suppuration, and abscess formation . Common pathogens include Group A Streptococcus, Staphylococcus aureus (including MRSA), and various anaerobes.[1,2]

Patients with RPA typically present with fever, neck pain, dysphagia, and a muffled voice. In severe cases, respiratory distress and stridor may occur due to airway compression . The clinical presentation can be less specific in younger children, necessitating a high index of suspicion for timely diagnosis. Diagnostic Modalities for RPA are Lateral Neck Radiographs, Traditionally used for initial evaluation, radiographs can reveal prevertebral soft tissue swelling indicative of an abscess. However, their sensitivity and specificity are limited compared to advanced imaging modalities . Second modality is computed Tomography (CT) Scan, The gold standard for diagnosing RPA, CT scans provide detailed images of the abscess, its extent, and its relationship to surrounding structures. CT imaging is crucial for planning surgical intervention . The last one is Ultrasound, While less commonly used than CT, ultrasound can be a useful tool for initial assessment and guidance during drainage procedures. [2,3,4]

Management of RPA typically involves a combination of antibiotic therapy and surgical drainage. Antibiotic Therapy includes empirical broad-spectrum antibiotics are initiated to cover common pathogens. Once culture results are available, antibiotic therapy should be tailored accordingly. Common choices include ampicillin-sulbactam, clindamycin, and, in cases of suspected MRSA, vancomycin. Surgical Drainage was Indicated for large abscesses, those causing significant symptoms or airway compromise, and when there is no improvement with antibiotics alone. Surgical approaches vary, including transoral and transcervical routes depending on the abscess's location and extent.[5,6]

The complications of untreated or inadequately treated RPA are severe and can include Airway Obstruction, due to swelling and mass effect in the retropharyngeal space. Mediastinitis is happened if Infection spreading to the mediastinum, a potentially life-threatening condition. Sepsis is Systemic infection, especially in the presence of virulent organisms. Jugular Vein Thrombosis is Infection extending to the carotid sheath structures, leading to thrombophlebitis With prompt and appropriate management, the prognosis for RPA is generally favorable. However, delays in diagnosis or treatment can lead to significant morbidity and mortality. Early recognition, accurate diagnosis, and timely intervention are critical to improving outcomes. Recent advancements in imaging techniques, particularly the increased use of CT scans, have improved the diagnosis and management of RPAs. Additionally, the development of newer antibiotics and evolving surgical techniques have contributed to better outcomes and reduced complication rates. [7,8]

Case Presentation

A 5-year-old male presented to the pediatric emergency department with a 3-day history of fever, neck pain, and difficulty swallowing. The patient's mother reported that he had been experiencing a sore throat for the past week, which had progressively worsened. The child also had reduced oral intake and a muffled voice. There was no history of recent trauma or foreign body ingestion. The patient had no significant past medical history, no known allergies, no regular medications, and immunizations up to date.

Based on physical examination in general, the patient appeared ill and was in moderate distress. Vital Signs were temperature 38.5°C, heart rate 110 bpm, respiratory rate 24 breaths per minute, blood pressure 90/60 mmHg, oxygen saturation 98% on room air. Patient's Neck was found stiffness with limited range of motion, particularly on extension. No palpable lymphadenopathy. Oropharynx was erythema and swelling of the posterior pharyngeal wall. The uvula was deviated to the right. Respiratory were found mild stridor on inspiration; no wheezing or crackles. Laboratory Tests were started from complete Blood Count (CBC) that was elevated white blood cell count (WBC) of 18,000 cells/µL with a neutrophil predominance. C-Reactive Protein (CRP) was elevated at 75 mg/L. Other supporting examination is imaging. Lateral Neck Radiograph showed soft tissue swelling in the retropharyngeal space with widening of the prevertebral space. Contrast-Enhanced CT Scan of the Neck revealed a hypodense lesion with rim enhancement in the retropharyngeal space, measuring approximately 3x2 cm, consistent with an abscess. There was also significant surrounding soft tissue swelling and edema. Diagnosis of this patient was Retropharyngeal abscess.

Initial Management of the patient was started on intravenous (IV) antibiotics (ampicillin-sulbactam) to cover common pathogens such as Streptococcus and Staphylococcus species. IV fluids were administered to maintain hydration. The patient was monitored closely for any signs of airway obstruction. Due to the size of the abscess and the potential for airway compromise, the decision was made to proceed with surgical drainage. The patient was taken to the operating room for drainage under general anesthesia. A transoral approach was used to access and drain the abscess. Approximately 10 mL of purulent material was aspirated, and cultures were sent for microbiological analysis. After the surgery, the patient was monitored in the pediatric intensive care unit (PICU) for 24 hours postoperatively for airway stability. Continued IV antibiotic therapy was provided based on culture sensitivities, which grew Group A Streptococcus. Pain management was achieved with IV acetaminophen and ibuprofen. For the follow-up, the patient showed significant clinical improvement with reduced fever, neck pain, and improved swallowing by the second postoperative day. He was transitioned to oral antibiotics (amoxicillin-clavulanate) to complete a 10-day course. A follow-up appointment was scheduled one week after discharge to assess recovery and ensure resolution of the infection. At the follow-up visit, the patient was asymptomatic with no complaints of neck pain, fever, or difficulty swallowing. A repeat physical examination showed no residual swelling or tenderness in the neck, and the oropharynx appeared normal. The patient's mother was educated on signs of recurrence and advised to seek immediate medical attention if symptoms reappeared.

Discussion

A 5-year-old male presented with a 3-day history of fever, neck pain, and difficulty swallowing, following a week of worsening sore throat. Examination revealed an ill-appearing child with a temperature of 38.5°C, neck stiffness, limited range of motion, posterior pharyngeal wall erythema and swelling, and uvula deviation. Vital signs were stable, though mild stridor was present on inspiration. Laboratory tests showed an elevated WBC count of 18,000 cells/µL and CRP of 75 mg/L. Imaging included a lateral neck radiograph showing soft tissue swelling and a contrast-enhanced CT scan revealing a 3x2 cm hypodense lesion with rim enhancement, indicating a retropharyngeal abscess. The diagnosis was confirmed as a retropharyngeal abscess.

Retropharyngeal abscesses (RPA) are deep neck infections that predominantly affect children under the age of six due to the presence of lymph nodes in the retropharyngeal space, which typically involute by this age. The retropharyngeal space extends from the base of the skull to the upper mediastinum and lies posterior to the pharynx, bordered by the buccopharyngeal fascia anteriorly, the prevertebral fascia posteriorly, and the carotid sheaths laterally. This anatomical location makes RPA potentially dangerous due to the risk of rapid progression to serious complications.

RPAs are often a result of suppuration following upper respiratory tract infections, particularly pharyngitis, tonsillitis, or sinusitis. They can also occur secondary to trauma, such as foreign body ingestion or instrumentation. In this case, the child's recent history of a sore throat suggests that the infection likely spread from an adjacent pharyngeal infection to the retropharyngeal space. The most common causative organisms include Group A Streptococcus, Staphylococcus aureus, and anaerobes.[9,10]

The classic clinical triad of RPA includes fever, neck stiffness, and dysphagia. Other symptoms may include odynophagia, drooling, a muffled or "hot potato" voice, and respiratory distress due to airway obstruction. The patient's symptoms of fever, neck pain, and difficulty swallowing, combined with physical findings of a muffled voice and neck stiffness, were highly suggestive of RPA. The deviation of the uvula observed in this patient is a key sign of a posterior pharyngeal mass effect, further supporting the diagnosis.[10]

Prompt and accurate diagnosis of RPA is essential to prevent complications. Initial evaluation often includes lateral neck radiographs, which can reveal prevertebral soft tissue swelling. However, the gold standard for diagnosis is a contrast-enhanced CT scan of the neck. CT imaging not only confirms the presence of an abscess but also provides detailed information on the size, extent, and involvement of surrounding structures. In this case, the CT scan revealed a hypodense lesion with rim enhancement, consistent with an abscess, and significant surrounding edema.[11]

Management of RPA involves a combination of antibiotic therapy and surgical intervention. Empirical antibiotic therapy should cover common pathogens and is typically initiated with broad-spectrum antibiotics such as ampicillin-sulbactam or clindamycin. Once culture results are available, antibiotic therapy should be adjusted accordingly. In this patient, IV ampicillin-sulbactam was started empirically, and later tailored to cover Group A Streptococcus based on culture results.

Surgical drainage is indicated for larger abscesses, those causing significant symptoms or airway compromise, and when there is no improvement with antibiotics alone. The surgical approach can vary; a transoral approach is common for drainage of abscesses located high in the neck, while a transcervical approach may be required for lower or more complex abscesses. In this patient, a transoral approach was chosen, and the procedure was successfully performed under general anesthesia, resulting in immediate symptom relief.[11,12]

The potential complications of untreated or inadequately treated RPA are significant and include:

1. Airway Obstruction: Due to swelling and mass effect in the retropharyngeal space, which can rapidly lead to respiratory distress.
2. Mediastinitis: Infection can spread from the retropharyngeal space to the mediastinum, resulting in a life-threatening condition.
3. Sepsis: Systemic infection can occur, especially in the presence of virulent organisms.
4. Jugular Vein Thrombosis: Infection may extend to the carotid sheath structures, leading to thrombophlebitis.

In this case, the timely surgical intervention and appropriate antibiotic therapy effectively prevented these complications. Postoperative follow-up is crucial to ensure complete resolution of the infection and to monitor for any signs of recurrence. The patient's significant improvement and the absence of symptoms at the follow-up visit indicate a successful resolution of the abscess. Educating parents and caregivers about the signs and symptoms of serious infections and the importance of early medical intervention is key to preventing delays in treatment.[1,13]

Conclusion

This case report underscores the importance of early recognition and prompt intervention in managing retropharyngeal abscesses in children. Combined medical and surgical treatment is essential to prevent severe complications and ensure favorable outcomes. The successful management of this case highlights the need for a multidisciplinary approach and the critical role of imaging in the diagnosis and treatment planning of RPAs.

Retropharyngeal abscesses, though less common due to modern medical advances, remain a significant clinical concern due to their potential for rapid progression and severe complications. This literature review highlights the importance of early recognition, appropriate diagnostic modalities, and a combination of medical and surgical management to ensure favorable outcomes. Ongoing research and advancements in medical technology continue to improve the understanding and treatment of this potentially life-threatening condition.

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