Peritonsillar Abscess with Internal Carotid Artery Stenosis

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Abstract Peritonsillar abscesses are the most common deep infections of the head and neck in young adults, despite the widespread use of antibiotics for treating tonsillitis and pharyngitis. Peritonsillar abscesses can be treated effectively with swift medical and sometimes surgical intervention. There are many complications of peritonsillar abscesses, some of which may be fatal due to the proximity of major vasculature. Here we present a case of a patient with a peritonsillar abscess that resulted in stenosis of the internal carotid artery without neurological sequelae. To our knowledge, this is the first reported case in the otolaryngology literature.

Keywords peritonsillar abscess; carotid artery stenosis; carotid thrombosis; Lemierre’s syndrome

1. Introduction

A peritonsillar abscess (PTA) is a suppurative collection within the space between the tonsil and the superior constrictor muscle, near the tonsil’s superior pole. Signs and symptoms of PTAs include sore throat, trismus, “hot potato voice,” fever, dysphagia, and a deviated uvula. Most commonly, these abscesses occur during November to December and April to May, which coincides with the highest incidence rates of streptococcal pharyngitis and exudative tonsillitis [1]. The estimated yearly cost of treating PTAs is over $150 million [4]. The bacteriology has remained relatively constant during the past half-century, with Streptococcus sp. being the most common organism cultured.

PTAs have traditionally been regarded as the end point of a continuum that begins as acute exudative tonsillitis, progresses to cellulitis, and eventually abscess formation [5]. Most PTAs resolve with simple medical and surgical management, but few can lead to life-threatening complications such as airway obstruction, abscess rupture, aspiration of pus, septic necrosis, or extension into deep neck tissues or posterior mediastinum [8]. Also of note, PTAs can develop into Lemierre’s syndrome which is typically characterized by evidence of internal jugular vein thrombosis and isolation of anaerobic pathogens, mainly Fusobacterium necrophorum [7].

2. Case presentation

A forty-four-year-old African American male with past medical history of hypertension presents to the emergency room with complaint of sore throat and subjective fever for five days. The patient also admits to right sided preauricular pain, anterior neck pain, dysphagia, and trismus. In the emergency room, the patient was given dexamethasone 10 mg, morphine sulfate 2 mg, and intravenous (IV) fluids and then the otolaryngology service was consulted.

The patient was seen in the emergency room and he was resting comfortably with no drooling. Vital signs revealed an afebrile patient with elevated blood pressure of 156/110 and tachycardia of 100. Upon inspection of the oral cavity and oropharynx, it was noted that the patient had two-finger trismus and a deviated uvula to the left. The right tonsil was 4+ with erythema and soft palate effacement. The neck exam revealed right anterior neck tenderness and generalized lymphadenopathy. The remainder of the exam was unremarkable.

A complete blood count revealed a white blood cell count of 17,000. A computed tomography (CT) scan was completed which showed a 2.4 × 2.1 × 2.1 cm right peritonsillar abscess with extension of inflammatory changes to the deep neck spaces (Figures 1–3). The patient was admitted to the hospital and started on IV clindamycin, IV dexamethasone, and fluids. The following day the abscess was drained and the patient was feeling much better. A closer look at the CT scan revealed that the edema surrounding the carotid sheath was causing a critical stenosis with possible occlusion of the right internal carotid artery. As a result, a CT scan with angiography was performed which revealed abrupt tapering of the proximal right internal carotid artery with complete occlusion approximately 1.7 cm distal to the origin, with reconstitution of the cavernous internal carotid artery secondary to retrograde flow from the Circle of Willis (Figure 4).
Despite the prevalence of PTAs, their workup and management continues to be controversial. The diagnosis is a clinical one; however, computed tomography imaging is being used more frequently to aid in diagnosis. Investigations have shown that intraoral ultrasounds have a high specificity and sensitivity for correctly diagnosing a PTA. Unfortunately, this tool is currently underutilized [8]. The use of adjuvant
steroids has been shown to reduce hospitalization time and reduce symptoms, yet much of this is anecdotal and further studies are needed [6]. The accepted surgical management continues to be needle aspiration or incision and drainage, however, no overwhelming evidence in favor of one or the other exists [8]. Quincy tonsillectomy, although infrequently performed, has been shown to be safe and to reduce recovery time when compared to interval tonsillectomy [2]. The recurrence rates vary between 10% and 22% [6,8].

Complications of peritonsillar abscesses can cause serious morbidity and mortality. Complications include airway obstruction secondary to the marked swelling in the oral cavity, extension of the infection into the tissues of the deep neck or posterior mediastinum, aspiration pneumonia, lung abscess secondary to peritonsillar abscess rupture, poststreptococcal sequelae (e.g., glomerulonephritis, rheumatic fever, etc.) when infection is caused by Group A streptococcus, and even death secondary to hemorrhage from erosion or septic necrosis into the carotid sheath [2].

Lemierre’s syndrome is a rare infectious process that is a complication of pharyngitis. It is associated with thrombosis of the tonsillar vein and internal jugular vein, septic emboli, and is commonly attributed to Fusobacterium necrophorum [9]. The jugular veins are frequently involved due to direct spread of an oropharyngeal infection to the thin walled veins [3]. Although unusual, it is thought that carotid involvement may occur due to direct diffusion of a septic process in close proximity [3]. Once bacteria reach the vasculature, there is metastatic spread of the bacteria which may be associated with systemic coagulopathy [3].

There are four case reports of internal carotid artery narrowing in the neurosurgery literature, two without neurological symptoms and two with cerebral infarctions [9]. Two of the cases were complicated by abscesses, a PTA and a retropharyngeal abscess, the other two did not involve a neck abscess [9]. This is the first reported case of ICA stenosis caused by a peritonsillar abscess.

4. Conclusion

This case report demonstrates a likely first reported case in the otolaryngology literature of internal carotid artery stenosis caused by a peritonsillar abscess without neurological sequel. A similar case was reported in the neurosurgery literature secondary to Lemierre’s syndrome with a concomitant PTA described above [9]. Although there were no complications in this case report, it is expected that there is a potential for significant morbidity and mortality from ICA stenosis. Thus, otolaryngologists should be made aware of all possible complications of PTAs including ICA stenosis as presented in this case report.

References


