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Bilateral peritonsillar abscess: A case report and pertinent literature review

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ABSTRACT

INTRODUCTION: The peritonsillar space is defined as the area between the palatine tonsillar capsule medially and the superior pharyngeal constrictor muscle laterally. Unilateral peritonsillar abscess (PTA) is more common than the bilateral condition. To the best of our knowledge, only 13 cases of bilateral PTA have been reported worldwide; this is the first case reported from Saudi Arabia.

PRESENTATION OF CASE: We present a case involving a 16-year-old boy who presented to the emergency department with a 5-day history of sore throat, dysphagia, trismus, drooling, and a muffled “hot-potato” voice, but with no symptoms of airway compromise. After several examinations, we diagnosed bilateral PTA. We performed an incision and drained the pus from both sides, which was positive for *Streptococcus pyogenes*. Postoperatively, the patient improved dramatically, and tonsillectomy was scheduled for 6 weeks later.

DISCUSSION: The difficulty in diagnosing bilateral PTA stems from the fact that it does not present with the usual clinical characteristics as unilateral PTA. These symptoms include asymmetry of the tonsils and palate, deviation of the uvula, and unilateral otalgia. As these cases carry the risk of impending airway compromise, we recommend airway management as the first step in treating such cases.

CONCLUSION: Based on our case and literature review, we recommend airway management as the first step, followed by further examinations, especially contrast-enhanced computed tomography, in cases of bilateral PTA. This condition lacks the hallmark of unilateral disease and may mimic many conditions, which will have different management approaches.

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1. Introduction

This case is reported in line with SCARE criteria [1].

The peritonsillar space is defined as the area located between the palatine tonsillar capsule medially and the superior pharyngeal constrictor muscle laterally. It is limited anteriorly by the palatoglossus muscle (anterior pillar) and posteriorly by the palatopharyngeus muscle (posterior pillar). Peritonsillar abscess (PTA), or quinsy, is defined as accumulation of pus inside the space described above [2]. Unilateral PTA is considered the most common complication of acute tonsillitis [3]. In the United States, it has

been estimated that PTA affects 30 per 100,000 individuals, with approximately 45,000 cases per year [4,5]. Clinically evident bilateral PTA is rare [2,4,6]. The male-to-female ratio is 2:1 [2,3,7], and the affected age range is 10–40 years, with an average of 27–28 years [2,4]. The mean age of PTA occurrence in Saudi Arabia is 22 years [3]. Uncertainty remains regarding the exact pathogenesis of PTA, but some believe it results from the spread of infection from infected tonsillar crypts after perforation of the capsule and involvement of Weber’s glands (salivary glands), with progression from acute tonsillitis to acute peritonsillitis (inflammation with localized erythema and induration without pus) and finally to PTA [2,3]. In unilateral PTA, diagnosis is established based on accurate history taking and such oral findings as edema and bulging of one anterior pillar and the soft palate as well as uvular deviation to the opposite side [5]. Diagnosis of bilateral PTA is challenging as it lacks the characteristic features of unilateral PTA, and presents as asymmetric edematous tonsils and pillars as well as a midline uvula [5]. Here, we describe a rare case of bilateral PTA, which presented

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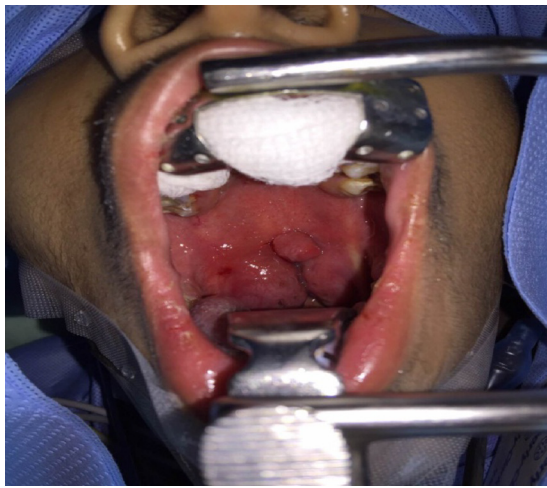


Fig. 1. shows bilateral enlarged tonsils (grade III to IV) obstructing 95% of the oral cavity, an edematous uvula with slight deviation to the left, and a congested and edematous soft palate.

in a community hospital, and provide a review of the pertinent literature on this topic.

2. The case

A 16-year-old boy without any known chronic illness presented to the emergency department with a 5-day history of sore throat, inability to talk, and difficult and painful swallowing of both liquid and food. His condition was associated with inability to open his mouth fully, drooling, a muffled “hot potato” voice, and sleep impairment. These symptoms were preceded by a mild sore throat and nasal discharge. He lost several kilograms during these days.

On physical examination, the patient appeared pale, dehydrated, anxious, and sick. His vital signs included a pulse rate of 114 beats/minute, blood pressure of 104/77 mmHg, temperature of 36°C, respiratory rate of 19 breaths/minute, and SpO₂ of 100%. Oral examination revealed an abundance of secretion, which was removed by suction, bilateral enlarged tonsils (grade III to IV) obstructing 95% of the oral cavity, an edematous uvula with slight deviation to the left, and a congested and edematous soft palate (Fig. 1). Marked trismus also was noted. Neck examination revealed swelling and tenderness of the left level III lymph node, nasal examination showed deviation of the nasal septum to the right and a spur on the right side, and ear examination showed bilateral intact tympanic membranes.

On admission, his laboratory results were as follows: white blood cell count, $19.73 \times 10^9/L$; neutrophils, 81.9%; lymphocytes, 10.3%; monocytes, 7.3%; eosinophils, 0.3%; basophils, 0.2%; platelet count, $436 \times 10^9/L$; uric acid, 449 $\mu\text{mol/L}$; and blood urea nitrogen, 6.58 mg/dL. Contrast-enhanced computed tomography (Fig. 2) revealed bilateral PTA, which was more evident on the right side (3 mm).

As intubation appeared difficult, all difficult intubation anesthesia instruments, including a surgical tracheostomy set, were prepared. However, glidescope-guided intubation was performed without resistance. We performed an incision at the superior portion of both anterior pillars, and then drained the pus under general anesthesia (Fig. 3). A Gram smear of the pus was taken and proved to be Gram-positive cocci (*Streptococcus pyogenes*), which was resistant to azithromycin and erythromycin, and sensitive to clindamycin, ceftriaxone chloramphenicol, levofloxacin, tetracycline, and vancomycin. Postoperatively, the patient's condition improved dramatically. His trismus subsided, and he started talking without



Fig. 2. shows bilateral ring enhancement in the peritonsillar area, indicating bilateral PTA, which was more evident on the right side (3 mm).



Fig. 3. shows pus draining out after incision under general anesthesia.

difficulty. His swallowing also improved, and his vitals were stable. Tonsillectomy was scheduled for 6 weeks later.

3. Discussion

Overall, PTA has an average incidence rate of 4.9%; however, incidence of bilateral PTA is not well known [2,5]. Most cases are reported among adolescents and young adults, and rarely involve young children or infants [7,8]. However, Marom and colleagues noted a changing trend of PTA occurring more frequently among older individuals, which is associated with longer hospitalization and higher morbidity and mortality rates compared with the pediatric age group [8]. PTA is known as a polymicrobial disease [3,5,8]. However, a recent study showed polymicrobial growth in only 20% of cases, with the vast majority of specimens (77.8%) demonstrating monomicrobial growth [9]. The aerobic microbiologic organisms involved in PTA include *Streptococcus pyogenes* and *Streptococcus viridans*, whereas *Fusobacterium* and *Bacteroides* are among

the most common anaerobes [3,5,9]. As in our case, a previous study conducted in Saudi Arabia revealed that the most common organism isolated from PTA is *Streptococcus pyogenes* [3]. Regarding the pathogenesis of PTA, albeit still uncertain, there are two current hypotheses. The first is that PTA is merely a complication of acute bacterial tonsillitis. The second is that PTA is a minor salivary gland infection (Weber's glands in particular) [4,7,8–10]. While some studies have shown a seasonal variation of PTA [7], others have found it to be statistically insignificant [8,9]. Bacterial culture is usually unnecessary as it does not enhance the outcome or change the management strategy in most patients [7]. Patients with PTA usually present with a history of sore throat for 3–4 days [2–4,7]. In general, the patient complains of sore throat, difficult and painful swallowing of both liquid and food (odynophagia and dysphagia), referred otalgia, inability to open the mouth fully (trismus), pooling and drooling of saliva, and fever exceeding 38 °C [2,3–5]. The clinician should have a high index of suspicion of bilateral PTA as persistent fever, despite drainage of pus, may indicate abscess on the contralateral side [4]. Smoking seems to have a strong correlation with PTA, which is associated with atrophy of the gingival mucosa, alteration of the oral cavity flora, and decreased oral immunity [8].

The difficulty of diagnosing bilateral PTA stems from the fact that it does not present with the usual clinical characteristics as unilateral PTA. These symptoms include asymmetry of the tonsils and palate, deviation of the uvula, and unilateral otalgia [6]. Most of the reported cases of bilateral PTA, including our case, present with trismus [6]. This bilateral disease mimics other conditions, such as severe acute bacterial tonsillitis, infectious mononucleosis, lymphoma, or major salivary gland mass [5,6]. Contrast-enhanced computed tomography can help in this diagnostic dilemma as it can differentiate between bilateral PTA and other conditions [5,6]. Intraoral sonography—a noninvasive bedside technique—also can aid diagnosis of PTA [2]. Complications can occur if PTA is left untreated or misdiagnosed, and include spread of infection to the retropharyngeal/parapharyngeal spaces, mediastinum, skull base along the neck vessels, epiglottis, and larynx, which can lead to aspiration, severe upper airway obstruction, and sleep apnea [2,4,6]. Systemic complications include sepsis and jugular vein thrombophlebitis [4]. In a study involving 172 patients with PTA, Chung et al. found that extraperitonsillar spread of infection and recurrent episodes of tonsillitis were significant predictors of PTA recurrence [11]. The reported recurrence rate ranges from 5.9% to 22.7% [2].

Treatment of PTA is controversial, and there is no consensus on the optimal management strategy [7]. However, early diagnosis and treatment are crucial to prevent severe complications. Treatment modalities include needle aspiration, incision and drainage, and quinsy tonsillectomy, combined with antibiotics and steroids [6,9]. The adjunctive use of steroids has proved to be helpful as it ensures immediate pain relief [10]. Since the 1980s, needle aspiration has been favored because it remits diagnostic and therapeutic capacities that other modalities lack [5]. The importance of early surgical drainage cannot be overstated as Tachibana et al. found that older age (>40 years), high C-reactive protein level, and no early drainage were independently associated with a longer period between symptom onset and complete disease resolution [10]. Quinsy tonsillectomy has more clinical value in acute conditions such as airway obstruction or sleep apnea [5]. In immune competent patients with inferior pole PTA, conservative management with antibiotics and observation for 48 h is acceptable, provided that any deterioration should warrant surgical intervention [2]. Although penicillin is considered effective and the best initial antibiotic for PTA, some authors have found no significant differences among penicillin alone, penicillin and metronidazole, or any other broad-spectrum agent [4,7].

4. Conclusion

Bilateral PTA is an otolaryngologic emergency, and airway management should be considered as the first step in this condition. It can present without the hallmarks of unilateral PTA, such as deviated uvula and unilateral peritonsillar bulging, which can make diagnosis difficult. PTA is usually treated with surgical drainage and antibiotics, and there is a correlation between early management and complete recovery. Bilateral PTA should be differentiated by radiologic examination to rule out other similar deep neck space infections, which require different management and surgical approaches. In addition, it is important to know that bilateral PTA can progress to serious airway symptoms and difficult intubation, mandating the availability of difficult airway equipment and experienced personnel.

Conflicts of interest

None.

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Ethical approval

Yes an approval has obtained.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

Ibrahim Al Awadh, Study design, literature review, drafting manuscript.

Turki Aldrees, drafting manuscript.

Saleh Al Qaryan, drafting manuscript.

Sami Alherthy, study design and manuscript review.

Hassan Al Shehri, manuscript review.

Guarantor

Ibrahim Al Awadh, Turki Aldrees.

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