

Parapharyngeal Abscess Developing on the Basis of Diabetes Mellitus and Surgical Management

Diabetes Mellitus Zemininde Gelişen Parafaringeal Apse ve Cerrahi Yönetimi

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ABSTRACT

Parapharyngeal abscess (PPA) is a rare but potentially life-threatening deep neck infection. The prognosis may be more severe, especially in the presence of systemic comorbidities. In this case report, the surgical treatment of a PPA that developed in a patient with type 1 diabetes mellitus and hypertension is presented in light of the literature. A 45-year-old man presented with sore throat and neck swelling for 10 days. Imaging revealed an abscess measuring 28×20 mm in the left parapharyngeal space. Due to significant laryngeal edema, an emergency airway was established, and a tracheotomy was performed. A left tonsillectomy was carried out via an intraoral approach, followed by abscess drainage. In deep neck infections, surgical intervention should not be delayed, particularly in patients with systemic comorbidities. Early airway management and effective drainage are of critical importance in preventing life-threatening complications.

Keywords: Parapharyngeal abscess, deep neck infection, surgical drainage, tracheotomy, diabetes

ÖZ

Parafaringeal apse (PFA), nadir görülen ancak potansiyel olarak yaşamı tehdit eden derin boyun enfeksiyonudur. Özellikle sistemik komorbiditelerin varlığında prognoz daha şiddetli seyredebilmektedir. Bu olgu sunumunda, tip 1 diabetes mellitus ve hipertansiyonu olan bir hastada gelişen PFA'nın cerrahi tedavi süreci literatür eşliğinde sunulmuştur. Kırk beş yaşında erkek hasta, 10 gündür devam eden boğaz ağrısı ve boyunda şişlik şikayetleriyle başvurdu. Görüntülemeler sonucunda sol parafaringeal alanda 28×20 mm boyutlarında bir apse saptandı. Belirgin larengeal ödem nedeniyle acil hava yolu güvenliği sağlandı ve trakeotomi uygulandı. İntraoral yaklaşımla sol tonsillektomi gerçekleştirildi ve ardından apse drenajı yapıldı. Derin boyun enfeksiyonlarında, özellikle sistemik komorbiditesi olan hastalarda cerrahi müdahale geciktirilmemelidir. Erken hava yolu yönetimi ve etkili drenaj, yaşamı tehdit eden komplikasyonların önlenmesinde kritik öneme sahiptir.

Anahtar Kelimeler: Parafaringeal apse, derin boyun enfeksiyonu, cerrahi drenaj, trakeotomi, diyabet

INTRODUCTION

Parapharyngeal abscess (PPA) is a deep neck infection of the parapharyngeal space that can progress rapidly and lead to serious complications. Due to the close anatomical relationship between this region and vital structures such as the carotid artery, internal jugular vein, cranial nerves, and the mediastinum, the infection can reach life-threatening proportions. PPA usually develops as a complication of peritonsillar abscess, odontogenic infections, or upper respiratory tract infections. Early diagnosis and appropriate treatment reduce mortality and morbidity. Systemic diseases,

such as diabetes mellitus and immunodeficiency, are the primary factors that complicate infection control. In this study, a case of PPA with hyperglycemia detected at admission is presented, along with the treatment approach and a review of the literature.

CASE REPORT

A 45-year-old male patient presented to the emergency department with a 10-day history of sore throat and neck swelling. His medical history included type 1 diabetes mellitus and hypertension for the past 10 years. Laboratory investigations revealed leukocytosis and elevated C-reactive

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protein levels. The patient's HbA1c level within the last 3 months was 6.3%; however, since his blood glucose was detected as 350 mg/dL upon admission, the internal medicine department was consulted. Blood glucose regulation was achieved by initiating treatment with subcutaneous insulin aspart and insulin glargine.

Prior to admission, the patient had been started on oral amoxicillin-clavulanate and intramuscular cefazolin at another center, but no clinical improvement was observed. Physical examination revealed significant erythema and swelling in the left tonsillar fossa, and a culture was obtained via needle aspiration from that area.

Contrast-enhanced computed tomography (CT) of the neck showed a collection compatible with an abscess in the left parapharyngeal space, measuring 28×20 mm with a contrast-enhancing wall. The lesion was located anterior to the vascular compartment and in close proximity to the carotid sheath structures. Specifically, the internal jugular vein was observed at the posterolateral border of the abscess. The carotid artery and internal jugular vein were not involved in the abscess collection, and no mediastinal spread was observed.

Treatment

The culture obtained via aspiration before treatment was reported as "no growth". Following consultation with the infectious diseases department, broad-spectrum intravenous antibiotic therapy (clindamycin 600 mg three times daily and ampicillin-sulbactam 1500 mg four times daily) was initiated, because the literature indicates that polymicrobial involvement (anaerobes: *Bacteroides* spp., *Peptostreptococcus* spp., *Fusobacterium* spp.; aerobes: *Streptococcus pyogenes* [Group A beta-hemolytic *Streptococcus*], *Staphylococcus aureus*, viridans group *Streptococci*) is most commonly responsible for these infections.

On the second day of hospitalization, following a drop in blood oxygen saturation to 72%, flexible laryngoscopy revealed widespread edema involving the uvula, epiglottis, and arytenoids, along with significant narrowing of the glottic airway. Due to airway obstruction, the airway was secured by emergency tracheotomy after intubation with video laryngoscopy. Subsequently, PPA drainage was performed. During intraoral exploration using a Davis-Boyle mouth gag, a left tonsillectomy was performed and a focus for PPA drainage was identified at the inferior pole of the left tonsillectomy bed. Adequate abscess drainage was achieved by expanding the tonsillectomy bed area. The field was irrigated with rifampicin and saline. The operation was completed without complications.

Rapid clinical improvement was observed in the early postoperative period. A control CT scan taken on the 7th postoperative day showed that the PPA had completely regressed. On the 7th postoperative day, after reconsultation

with the Infectious Diseases service, the patient was discharged following decannulation with a prescription for oral therapy consisting of amoxicillin-clavulanate 1000 mg, 2x1 tablet/day, and clindamycin 450 mg, 3x1 tablet/day for 14 days.

DISCUSSION

PPA can cause high-mortality complications, such as carotid artery erosion, internal jugular vein thrombosis (Lemierre's syndrome), and mediastinitis, because of the anatomical proximity of the parapharyngeal space to these structures. In this case, a history of diabetes mellitus and the detection of hyperglycemia at admission stand out as the most fundamental risk factors that accelerate the progression of the infection and create resistance to treatment.

The literature indicates that diabetic patients are more prone to deep neck infections and have significantly higher complication rates than non-diabetic patients. In a study by Huang et al. (1), it was shown that high HbA1c levels and hyperglycemia facilitate the spread of the abscess by impairing leukocyte chemotaxis. In the present case, the blood sugar level of 350 mg/dL explains the aggressive initial course of the infection and the lack of response to oral antibiotic therapy.

The etiology in PPA cases is generally polymicrobial. It has been stated in the literature that the most common agents isolated in patients with deep neck infections are *Streptococcus viridans* and *Klebsiella pneumoniae*; however, the incidence of *Klebsiella pneumoniae* is higher in diabetic patients (2). The absence of growth on culture may be attributed to the broad-spectrum antibiotics (amoxicillin-clavulanate and cefazolin) administered prior to admission. Despite the negative culture, the combination of ampicillin-sulbactam and clindamycin is consistent with the empirical treatment approach recommended in current guidelines, as it covers both the aerobic and anaerobic spectrum (3).

The sudden drop in saturation and the widespread supraglottic edema, detected on laryngoscopy on the second day of hospitalization, are among the most feared complications of PPA. Cho et al. (4) emphasized that inflammation in the parapharyngeal region could trigger laryngeal edema, rapidly leading to obstruction. In these situations requiring difficult airway management, an intubation attempt via video laryngoscopy and, in case of failure, an emergency tracheotomy are life-saving. The proactive airway management in this case supports the "airway security first" principle in the literature.

Contrast-enhanced neck CT is the gold standard for PPA diagnosis. The literature recommends that surgical drainage should not be delayed in abscesses larger than 2 cm and those causing airway compression (5). An intraoral approach may be preferred, especially in cases where vascular structures are not involved and the abscess is prominent medially (in the

tonsillar bed) (6). In this case, drainage performed through the tonsillectomy bed was a surgical choice consistent with the localization of the abscess.

The patient's rapid postoperative clinical improvement and decannulation on the 7th day demonstrate the combined success of aggressive surgical drainage and strict glycemic control. Gidley et al. (5) stated that oral antibiotic treatment for patients discharged after deep neck infections should be completed for at least 10-14 days, noting that recurrences often stem from inadequate treatment duration.

CONCLUSION

PPA is an infection that requires rapid diagnosis and aggressive treatment and can be life-threatening, especially when accompanied by systemic diseases. In cases occurring in patients with underlying diabetes mellitus, early airway protection, timely surgical drainage, and multidisciplinary management are vital to preventing serious complications.

Ethics

Informed Consent: Informed consent was obtained from the patient based on their information.

Footnotes

Authorship Contributions

Surgical and Medical Practices: M.N.Ş., M.I., Ö.İ., D.Y., Concept: M.N.Ş., M.I., Ö.İ., D.Y., Design: M.N.Ş., M.I., Ö.İ., D.Y., Data Collection or Processing: M.N.Ş., M.I., Ö.İ., D.Y., Analysis or Interpretation: M.N.Ş., M.I., Ö.İ., D.Y., Literature Search: M.N.Ş., M.I., Ö.İ., D.Y., Writing: M.N.Ş., M.I., Ö.İ., D.Y.

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