

CASE REPORT

Retropharyngeal Abscess related to Hematogenous Dissemination

¹Vasilios Chalkiadakis, ²George Roukis, ³Georgios Karatzias, ⁴Michael Androulakis

ABSTRACT

A retropharyngeal abscess is an infection in the deep space of the neck and it is a potentially life-threatening condition, because of severe complications. Today, it is rare in adults, but it is still present in immunosuppressed patients or after local trauma by foreign body. Diagnosis is challenging due to the variety of the symptoms and a computed tomography (CT) scan of the area is required. Its management requires highly specialized care, based on antibiotic therapy and surgical drainage of the abscess.

We report a case of a retropharyngeal abscess in a diabetic patient, with renal nephropathy and end-stage renal failure. Interestingly, the abscess was inside the thoracic cavity and surgical procedure included also thoracotomy.

Keywords: Retropharyngeal abscess, Renal nephropathy, Thoracotomy, Vascular transplant.

How to cite this article: Chalkiadakis V, Roukis G, Karatzias G, Androulakis M. Retropharyngeal Abscess related to Hematogenous Dissemination. *Int J Otorhinolaryngol Clin* 2015;7(2):85-87.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

A retropharyngeal abscess is practically an infection which occurs in one of the deep spaces of the neck. Nowadays, this condition is more frequent in children, in which it may occur spontaneously.^{1,2} Usually, an abscess in this area is rare in adults due to the wide use of antibiotic therapy. However, it may present at immunosuppressed adults, or after local trauma, either by a foreign body or instrumental procedures.³

Diagnosis is challenging because of its variable presentation. Most common symptoms include fever, chills, sore throats, dysphagia, odynophagia, neck pain and respiratory distress, dyspnea or stridor.⁴ Management requires highly specialized care, including not only intravenous

antibiotic treatment, but also surgical drainage in order to reduce mortality.⁵ Serious complications may occur in these patients, so usually, they are admitted to the intensive care unit (ICU).

We report on a case of retropharyngeal abscess in a diabetic patient with end-stage renal failure. This particular case was interesting because the location of the abscess was inside the thoracic cavity and thoracotomy was required during surgery.

CASE REPORT

We are referring to a case of a 47 years old female patient with a long history of diabetes mellitus, which reflected to renal nephropathy and end-stage renal failure. The patient had been operated in her left arm for removing a vascular transplant, which had been infected and started to purulent. Both cultures, blood and purulent area of the left arm, revealed *Staphylococcus aureus*. Teicoplanin 400 mg/48 hr i.v. and netilmicin 150 mg/48 hr was administered. Moreover, the initial supportive management involved analgesics and antipyretics. Despite the above administered antibiotics, the patient became septic (temperature of 39°C, white blood cell (WBC) 15.100/mm³, neutrophils 83%, Ht 28.5% and CRP 19) and she was administered to the ICU of our hospital. The jugular vein catheter which was used for hemodialysis, was removed. The antibiotics changed to teicoplanin 400 mg × 1/24 hr, rifampicin 600 mg × 1 p.o. and tigecycline 50 mg × 1 i.v. She was also transfused with one unit of red blood cell (RBC).

With the above therapeutic strategies, patient's general condition improved 2 days later, but she continued to feel pain at the neck and the left shoulder, and also started to have small difficulty in swallowing. On clinical examination, the patient had a temperature of 38°C, while mild respiratory distress and stridor were noted. Laryngoscopy revealed a significant edema of the oropharynx and hypopharynx and for this reason computed tomography (CT) scans in the brain, cervical spine area and thorax were obtained. A large retropharyngeal abscess was noticed from the 4th cervical vertebra to the 3rd thoracic vertebra. The size of the abscess was 1.7 × 3.5 cm as depicted in Figure 1.

We speculated that the abscess was a result of the uncontrolled infection on the left arm. The patient underwent hemodialysis from femoral vein, transfusion

^{1,2}Resident, ^{3,4}Consultant

¹⁻⁴Department of ENT, General Hospital Asklepieio Voulas Attiki, Greece

Corresponding Author: Vasilios Chalkiadakis, Resident Department of ENT, General Hospital Asklepieio Voulas, Attiki Greece, Phone: 00302132163000, e-mail: chalkiadakis.v@gmail.com

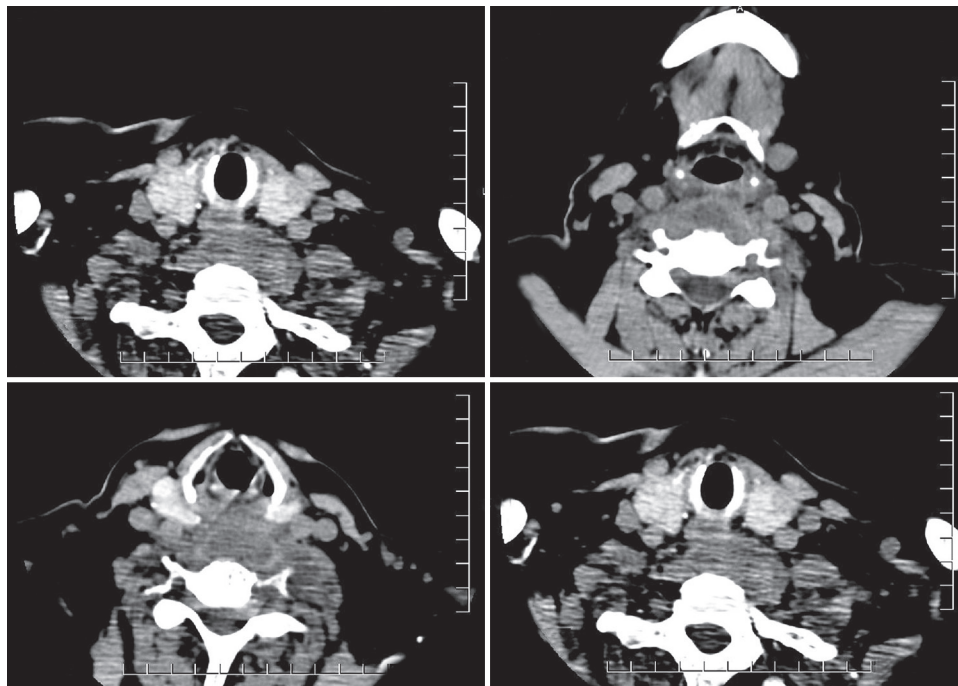


Fig. 1: Computed tomography of the neck at different levels. A large retropharyngeal abscess (1.7 × 3.5 cm) may be observed from the 4th cervical vertebra to the 3rd thoracic vertebra

of one unit of RBC, and under general anesthesia, operation for surgical drainage of the abscess through thoracotomy. This was decided due to the extended area of the abscess formation, from C4 until T3. After the operation, the patient returned at the ICU, in order to continue intravenous supportive therapy. The patient had consecutive clinical improvement and 9 days later, she was discharged.

Culture from the pur of the retropharyngeal abscess revealed various types of bacteria. Among those, *Staphylococcus aureus* was present, supporting our hypothesis for hematogenous dispersion of the bacteria.

Review of Literature with Discussion

The retropharyngeal space is located posterior to the pharynx (nasopharynx, oropharynx, hypopharynx), the larynx and the trachea. The buccopharyngeal fascia and the prevertebral fascia form the anterior and the posterior border respectively, while the carotid sheaths are laterally. The retropharyngeal space extends superiorly to the skull base and inferiorly to the mediastinum.⁶ A retropharyngeal abscess is an infection in this area, which may result in significant morbidity. This condition results to severe complications, including airway obstruction, bronchial erosion, mediastinitis, pyopneumothorax, jugular venous thrombosis, epidural abscess, cranial nerve dysfunction (IX–XII) erosion of the carotid artery, pericarditis and sepsis.⁷

Nowadays, retropharyngeal abscess has a low incidence mainly because of the use of antibiotic therapy.

Children and immunosuppressed adults may exhibit this infection more frequently.⁸ This condition may develop by various pathophysiologic mechanisms. Either the infection follows a contiguous area affecting the lymph nodes or this space is infected by a penetrating foreign body. It may also occur due to iatrogenic causes, including dental injection procedures, instrumentation with endoscopy, endotracheal intubation or surgery.^{9,10} The abscess in the retropharyngeal space may be caused by various organisms, included aerobic (such as *Staphylococcus aureus*, *Beta hemolytic streptococci*, *Streptococcus pyogenes*, *Haemophilus influenzae*) or anaerobic organisms (*Bacteroides species*, *Veillonella species*, *Fusobacterium species*).¹¹

In the case that was presented above, our theory is that the abscess was the result of the expansion of the uncontrolled arm infection. The immune system of the patient was suppressed and the infection was disseminated hematogenously despite antibiotic therapy. The treatment was administrated at reduced dosage according to renal function of the patient.

The diagnosis of retropharyngeal abscess may be challenging. Clinical symptoms are not specific and may vary significantly. Adult patients usually present with fever, chills, sore throat, neck pain, dysphagia or trismus. Physical examination is expected to reveal posterior pharyngeal edema, cervical adenopathy, nuchal rigidity respiratory distress and stridor.¹² In our case, most signs of infection were absent due to immune suppression caused by diabetes and renal failure. However, the patient

had trismus and dysphagia, while laryngoscopy revealed significant edema of the oropharynx and hypopharynx. Blood examination showed a non-specific leukocytosis. In order to complete the diagnosis, CT was necessary. At CT scan the abscess appeared as a hypodense lesion with peripheral rim enhancement, in addition to soft tissue thickening, obliterated fat planes and mass effect to surrounding tissues. Computed tomography scan gave also information about the size of the abscess and its specific location. Although the diagnostic value of CT in different neck deep spaces is recognized, clinicians must be aware because there are limitations in differential diagnosis of abscesses in the retropharyngeal space. Cellulitis and cystic degeneration of cervical metastases may sometimes mimic an abscess, either on clinical presentation or CT images.¹³

For appropriate management, the first step is to ensure the airway. An endotracheal intubation may be required, but it is usually very difficult due to edema, spine rigidity and trismus. Furthermore, the possibility of traumatic rupture of the abscess during intubation is present, and may lead to mediastinitis. For these reasons, a cricothyrotomy or even a tracheotomy may be required in order to secure the airway.⁸ After that, initial supportive therapy includes hydration, management of underlying diseases, including diabetes, and antibiotics. The culture in the present case revealed mixed aerobic and anaerobic organisms. More specific, *Staphylococcus aureus* and *Bacteroides species* were isolated. Antibiotic therapy alone may be insufficient, for the management of retropharyngeal abscess. Therefore, combined use of pharmacologic treatment with surgical drainage may be essential. This approach is recommended by most authors, although the ideal time for interventional management is controversial.¹²

The most common approaches for the incision and drainage procedure are either intraoral or transcervical. Because of the enlarged retropharyngeal mass and the location of the inferior part inside the thoracic cavity, thoracotomy was performed. Despite the severity of the clinical status, the patient was improved after the operation, without significant complications. The overall prognosis is usually favorable. The mortality rate ranges from 1 to 2.6% due to sepsis and multi-organ failure.¹⁴

CONCLUSION

Although retropharyngeal abscesses are rare in adults, they remain critical infections. Diagnosis is based on clinical examination and CT scan. These patients require specialized care. Stabilization of airway, supportive treatment with broad-spectrum antibiotics and surgical drainage of the abscess may be needed. Severe complications may be owing to delayed diagnosis and management. The outcome is usually favorable.

REFERENCES

1. Page NC, Bauer EM, Lieu JEC. Clinical features and treatment of retropharyngeal abscess in children. *Otolaryngol* 2008;138(3):300-306.
2. Lander L, Lu S, Shah RK. Pediatric retropharyngeal abscesses: national perspective. *Int J Pediatric Otorhinolaryngol* 2008;72(12):1837-1843.
3. Ridder GJ, Technau-Ihling K, Sandre A, Boedeker CC. Spectrum and management of deep neck space infections: an 8-year experience of 234 cases. *Otolaryngol Head Neck Surg* 2005;133(5):709-714.
4. Marra S, Hotaling AJ. Deep neck infections. *Am J Otolaryngol* 1996;17(5):287-298.
5. Seyhan T, Ertas NM, Borman H. Necrotizing fasciitis of the chest wall with a retropharyngeal abscess: case report and literature review. *Ann Plastic Surg* 2008;61(5):544-548.
6. Craig FW, Schunk JE. Retropharyngeal abscess in children: clinical presentation, utility of imaging, and current management. *Pediatr* 2003;111(6):1394-1398.
7. Pelaz AC, Allende AV, Pendas JLL, Nieto CS. Conservative treatment of retropharyngeal and parapharyngeal abscess in Children. *J Craniofac Surg* 2009;20(4):1178-1181.
8. Benmansour N, Benali A, Poirrier AL, Cherkaoui A, Oudidi A, Elalami MN. Retropharyngeal abscess in adults. *Rev Laryngol Otol Rhinol (Bord)* 2012;133(3):137-139.
9. Etchevarren V, Bello O. Retropharyngeal abscess secondary to traumatic injury. *Pediatr Emerg Care* 2002;18(3):189-191.
10. Afolabi OA, Fadare JO, Oyewole EO, Ogah SA. Fish bone foreign body presenting with an acute fulminating retropharyngeal abscess in a resource-challenged center: a case report. *J Med Case Reports* 2011;5:165-169.
11. Sato K, Izumi T, Toshima M, et al. Retropharyngeal abscess due to methicillin resistant *Staphylococcus aureus* in a case of acute myeloid leukemia. *Int Med* 2005;44(4):346-349.
12. Schott CK, Counselman FL, Ashe AR. A pain in the neck: non-traumatic adult retropharyngeal abscess. *J Emergency Med* 2013;44(2):329-331.
13. Chuang SY, Lin HT, Wen YS, Hsu FJ. Pitfalls of CT for deep neck abscess imaging assessment: a retrospective review of 162 cases. *B-ENT* 2013;9(1):45-52.
14. Shah RK, Chun R, Choi SS. Mediastinitis in infants from deep neck space infections. *Otolaryngol* 2009;140(6):936-938.