

A Case of Internal Jugular Vein Thrombophlebitis with Deep Neck Abscess Treated by Debridement of Internal Jugular Vein and Vacuum-assisted Closure Therapy

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– ABSTRACT –

Internal jugular vein (IJV) thrombophlebitis is a rare complication of deep neck abscess. A 55-year-old male was diagnosed with retropharyngeal and mediastinal abscesses. In spite of treatment with surgical drainage and antibiotics, his deep neck abscess was aggravated and there was newly developed diffuse necrosis of the right IJV. We performed surgical drainage again with closure of the fistula on the posterior pharyngeal wall caused by the neck abscess and applied vacuum-assisted closure therapy. However, the patient's condition deteriorated. Therefore, we decided to perform debridement of the necrotic tissue in the right IJV and ligate the vein. After that, intravenous antibiotics and vacuum-assisted closure therapy were continued and the patient was successfully treated. In case of deep neck abscess accompanied by IJV thrombophlebitis, ligation of the IJV and removal of the causative necrotic tissue would be effective. (*J Clinical Otolaryngol* 2018;29:104–108)

KEY WORDS : Deep neck abscess · Internal jugular vein · Thrombophlebitis · Vacuum-assisted closure · Surgical procedure.

Introduction

Deep neck abscess is defined as the presence of pus in the spaces and fasciae of the head and neck. This condition can be classified into retropharyngeal, peritonsillar, masseteric, pteropalatine maxillary, parapharyngeal, submandibular, parotid, and floor of mouth abscesses.¹⁾ Deep neck abscess is potentially fatal, and active diagnostic and therapeutic management is necessary to avoid life-threatening complications such as airway obstruction, cervical necrotizing fasciitis, jug-

ular vein thrombosis, disseminated intravascular coagulation-related empyema, mediastinitis, aspiration pneumonia or thrombosis/aneurysm of the carotid artery.^{2,3)} Among the complications of deep neck abscess, internal jugular vein (IJV) thrombophlebitis is rare but it may lead to a life-threatening condition if not treated in a timely and proper manner. Due to the rarity of this complication, there are no specific guidelines and evidence for the optimal treatment.⁴⁾

We report a case of a patient who had deep neck abscess with IJV thrombophlebitis, which was treated with ligation of the IJV, removal of the causative necrotic tissue and vacuum-assisted closure therapy.

Case Report

A 55-year-old male patient visited the hospital due to sore throat for 7 days. Nine days ago, the patient had a history of fish bone impaction in the oropharynx,

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and he was treated with antibiotics at a local hospital. However, the symptom aggravated, and the patient was transferred to our hospital. The patient was recently diagnosed with diabetes mellitus, and the state of blood sugar control was poor. On physical examination, a hyperemic, diffuse swelling in the retropharynx was detected. Neck and chest computed tomography (CT) with contrast enhancement revealed massive gas formation with fluid collection in both the neck and mediastinum (Fig. 1).

Emergency incision and drainage, and tracheosto-

my were immediately performed. However, in spite of treatment with surgical drainage and antibiotics (3rd generation cephalosporin+metronidazole), and blood and pus culture test revealed *Streptococcus anginosus*. His deep neck abscess was aggravated and there was newly developed diffuse necrosis of the right IJV (Fig. 2). We performed surgical drainage again with closure of the fistula on the posterior pharyngeal wall caused by the neck abscess and applied vacuum-assisted closure therapy. After surgery, additional blood and pus culture test revealed *Pseudomonas ae-*

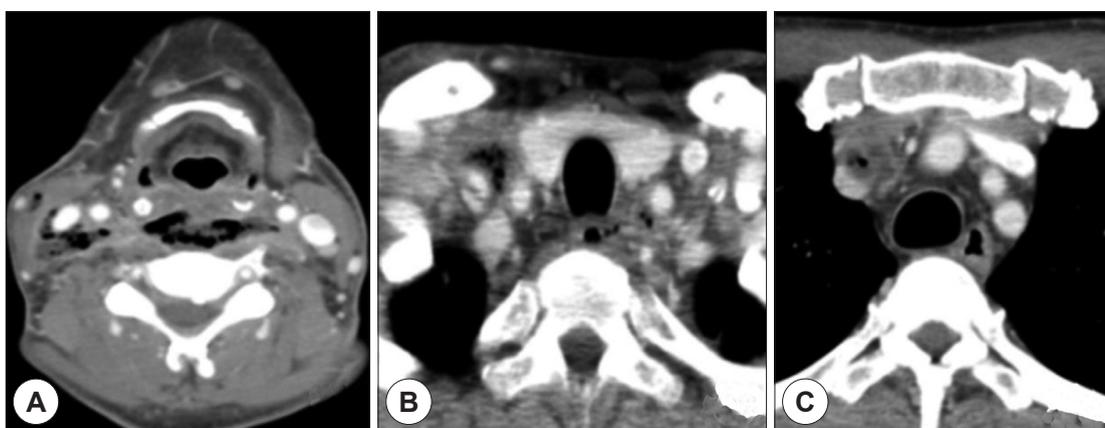


Fig. 1. Fluid collection with peripheral enhancement and air foci, along the retropharyngeal space (A) and both carotid spaces (B). Abscess formation extending to the right supraclavicular area (C).

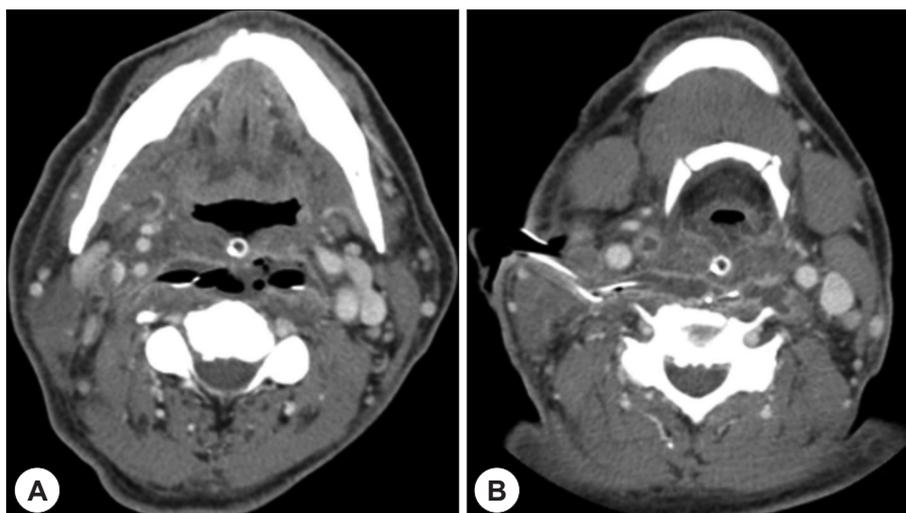


Fig. 2. Postoperative follow-up CT scans. A : Fluid collection with peripheral enhancement and air foci persist in the retropharyngeal space and both carotid spaces. B : Thrombotic occlusion of the right IJV has developed.

ruginosa, and we added the aminoglycoside antibiotics. However, the fever did not subside and the laboratory test, including CRP and WBC continued to deteriorate. Therefore, we decided to perform debridement of the necrotic tissue in the right IJV and ligate the vein (Fig. 3). After that, intravenous antibiotics (3rd generation cephalosporin+metronidazole) and vacuum-assisted closure therapy were continued and the patient was successfully treated (Fig. 4).

After one month of hospitalization, the patient was discharged, and currently, the patient is leading a nor-

mal life.

Discussion

Deep neck abscess is one of the most critical diseases due to its frequency of onset and serious complications.¹⁾ Deep neck abscess is caused by previous uncontrolled infections such as tonsillitis, dental infections, surgery, or trauma.^{2,3)} In the event of illness, risk factors including infections, foreign bodies, trauma, and immunosuppression, and congenital lesions need to

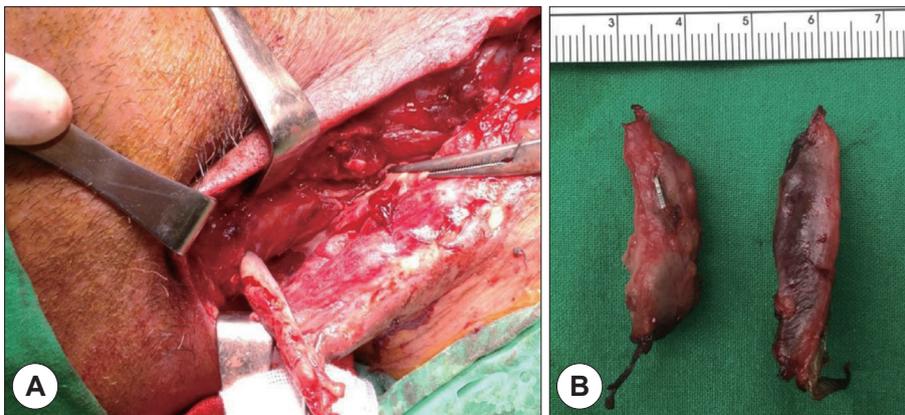


Fig. 3. Operative photos. A : This is the photograph of the operation field after removal of the necrotic tissue in the right IJV. B : The removed necrotic tissue from the right IJV.

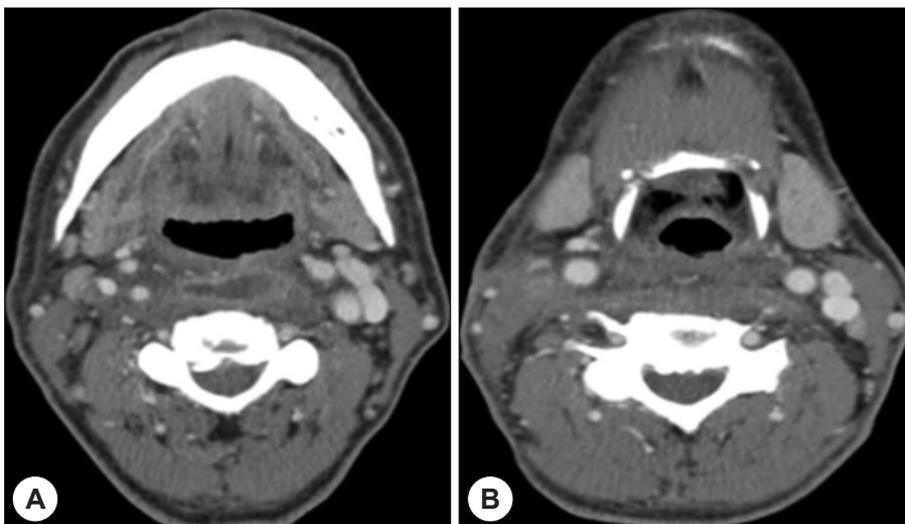


Fig. 4. Decreased extent of the abscess pocket in the retropharyngeal space (A) and both carotid spaces (B).

be investigated.⁵⁾ In our case, the patient had a recent history of fish bone impaction and newly detected diabetes mellitus.

Upon diagnosis of deep neck abscess, clinical manifestations, such as neck swelling, pain, fever, and dyspnea, need to be assessed. Also, laboratory examination, blood and pus culture can be performed. Computed tomography with contrast can be performed to diagnose and assess the range and degree of the abscess.⁶⁾ In addition, fine needle aspiration biopsy is useful in distinguishing between abscess and cellulitis.

The principle of deep neck abscess management includes securing the airway, drainage of the abscess, antimicrobial therapy, and management of life-threatening complications such as sepsis, mediastinitis, pneumonia, and jugular vein thrombosis.⁷⁾ Early diagnosis and antibiotic therapy are vital for achieving good therapeutic outcomes. It is recommended to start intravenous therapy that also acts on anaerobic pathogens as early as possible and use it for 3 to 6 weeks. Moreover, it is highly recommended to drain purulent fluids that should be collected for rapid recovery and confirmation of causative pathogens.⁸⁾ Yang, et al.⁹⁾ suggested that the treatment of deep neck abscess in old age patients more than 65 years, or the patients with ineffective empiric antibiotics or underlying systemic diseases should be more aggressive because life-threatening complications happen more frequently.

Deep neck abscess with IJV thrombophlebitis can be a dangerous condition, and therefore, proper and rapid treatment is required.²⁾ Surgical ligation or excision of the IJV can be performed in patients who have ongoing sepsis or those who do not respond to antibiotic therapy.^{10,11)} In this case, the patient did not show great improvement even after continuous antibiotic therapy. The fever recurred, and the patient's condition deteriorated. Consequently, the vein was ligated after performing debridement of the necrotic tissue in the right IJV. In addition to general surgical drainage and antibiotic treatment, vacuum-assisted closure therapy was performed in this patient through insertion of a drain into the neck wound. Vacuum-as-

sisted closure, also known as negative pressure wound therapy, controls the drainage of fluids, reduces the local edema and bacterial load, and helps in early development of granulation tissue by angiogenic stimulation.^{12,13)} By using vacuum-assisted closure, the abscess in the deep neck space must have been more effectively drained, and as the bacterial load was reduced, the abscess did not exacerbate, subsequently helping in tissue healing. By combining these treatments, the patient was successfully treated.

The role of anticoagulation in the treatment of IJV thrombophlebitis is controversial, and there are no controlled studies that have assessed the effect of anticoagulation in septic thrombophlebitis of the IJV. Several authors recommend using anticoagulation when there is evidence of thrombus expansion.¹⁰⁾ Other authors have reported the potential of anticoagulation in preventing new development at another site with rapid resolution of thrombophlebitis and bacteremia. Thus, the authors support the use of anticoagulation in addition to antibiotic therapy.¹⁰⁾ In this case, anticoagulation therapy was not used.

Conclusion

In case of deep neck abscess accompanied by IJV thrombophlebitis, ligation of the IJV and removal of the causative necrotic tissue would be effective. Also, it would be helpful to apply vacuum-assisted closure therapy to the wound after surgical drainage.

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