

Case Report



A Rare Life-Threatening Complication of Deep Neck Abscess; Internal Jugular Vein Erosion

Ediz YORGANCILAR, Vefa KINIŞ^a, Ramazan GÜN, Salih BAKIR, Musa ÖZBAY, Faruk MERİÇ

Dicle University Faculty of Medicine, Department of Otorhinolaryngology, Istanbul, Turkey

ABSTRACT

A 16-year-old male was admitted to our hospital with the diagnosis of deep neck abscess due to a dental infection was mentioned. Surgical drainage was applied under local anesthesia. The patient did well for about 2 days. Two days later, acute swelling on patient's neck had began. The computed tomography revealed massive cervical hematoma and right internal jugular vein thrombophlebitis. The neck exploration was made successfully. Vascular complications of deep neck infections are less common but they are still present. We could not find a similar case report of the internal jugular vein erosion and silent hematoma in the neck due to deep neck infection.

Key words: Jugular vein, Erosion, Neck abscess, Hematoma

ÖZET

Derin Boyun Apesinin Hayatı Tehdit Eden Nadir Bir Komplikasyonu; İnternal Juguler Ven Erozyonu

On altı yaşında erkek hasta diş enfeksiyonu kaynaklı olduğu düşünülen derin boyun apsesi tanısıyla dış merkezden hastanemize refere edildi. Lokal anestezi altında apseye cerrahi drenaj uygulandı. Hastanın genel durumu 2 gün boyunca iyi seyretti. İki gün sonra, hastanın boynunda akut gelişen bir şişlik başladı. Çekilen bilgisayarlı tomografi, masif servikal hematoma ve sağ internal juguler vende tromboflebit olduğunu gösterdi. Cerrahi eksplorasyon başarıyla uygulandı. Derin boyun enfeksiyonlarının damarsal komplikasyonları sık olmamakla birlikte halen görülebilmektedir. Bu hastamıza benzer olarak bildirilmiş, derin boyun enfeksiyonuna bağlı internal juguler ven erozyonu ve sessiz hematoma şeklinde bir vaka takdimine rastlamadık.

Anahtar Sözcükler: Juguler ven, Erozyon, Boyun apsesi, Hematom

Deep neck infections are serious diseases that involve potential spaces in the neck (1). The teeth are the most common primary site of infection, followed by the tonsils (2). The incidence of this disease was relatively high before the advent of antibiotics. If it is not diagnosed and treated appropriately, these infections progress rapidly and are associated with high morbidity and mortality (1). The most dangerous complication is descending necrotising fasciitis (2). Vascular complications are other serious and life-threatening complications of deep neck infection and abscesses (3). Spontaneous hemorrhage and hematoma of the neck occurs rarely. The spontaneous cervical hematoma due to internal jugular vein erosion has not been reported in the literature before. We report a case of a spontaneous cervical hematoma due to internal jugular vein erosion in deep neck abscess.

CASE REPORT

A 16 year old male was admitted to the otolaryngology department of our hospital with the complaint of a 10-

day history of tooth ache and diffuse swelling in the front part of his neck, trismus and fever. The past medical history was unremarkable. Physical examination findings were lower 6th tooth infection in the oral cavity and a large, tender, warm and also fluctuant mass in the hyoid region. His white blood cell count was 25.200/mm³ and erythrocyte sedimentation rate was 75 mm/h, hematocrit was 38%. Other laboratory findings were normal. The computed tomography examination revealed a deep neck abscess and emphysema (Figure 1, 2). Deep neck abscess due to a dental infection was mentioned. Midline incision and surgical drainage was applied under local anesthesia. Drainage was approximately 50 cc of foul-smelling pus. Aerobic and anaerobic cultures of pus samples were studied. Intravenous ceftriaxone and metronidasole were administered initially. The microbiological studies of the pus revealed staphylococcus aureus. It was susceptible to ceftriaxone according to antibiogram and susceptibility test. Therefore, we continued to give our previous antibiotic combination therapy. We performed

^a Corresponding Adress: Dr. Vefa KINIŞ, Dicle University Faculty of Medicine, Department of Otorhinolaryngology, Istanbul, Turkey
Phonel: + 90 412 2488001
e-mail: vefakinis@hotmail.com

*Bu çalışma 32. Ulusal KBB ve BBC Kongresi'nde poster olarak sunulmuştur.

daily dressing exchange to the wound on the neck. The patient did well for about 2 days. Two days later, acute swelling on patient's neck had began. An obvious fluctuant mass was present in the neck. He had no complaint of dyspnea, or dyspagia but have had mild pain on his neck. The physical examination revealed a regular pulse rate of 96/min, a blood pressure of 120/75 mmHg. On laryngeal fiberoptic examination, there was an ecchymotic bulging of the right parapharyngeal space. The computed tomography revealed massive cervical hematoma and right internal jugular vein thrombophlebitis (Figure 3, 4). The neck exploration was made. A large hematoma in the parapharyngeal and retropharyngeal space was found. After the evacuation of hematoma venous bleeding started from eroded internal jugular vein. The internal jugular vein was exposed. To stop the bleeding, digital pressure applied on the eroded part of internal jugular vein. The necrotic and eroded part of internal jugular vein was exposed and subsequently ligated and divided (Figure 5). The hemorrhage was controlled. The patient sustained about 1 liter of blood loss. The clot of venous blood was encountered in the neck spaces. Decompression of neck spaces was done. The patient did well postoperatively. He was discharged 2 weeks after admission and recovered uneventfully.

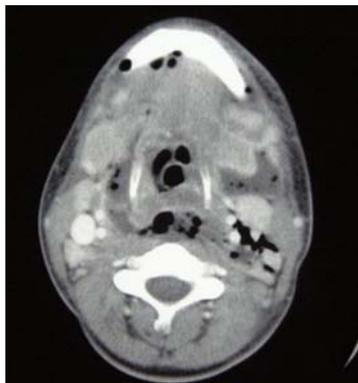


Figure 1. The computed tomography shows a deep neck abscess



Figure 2. The computed tomography reveals a deep neck abscess and emphysema

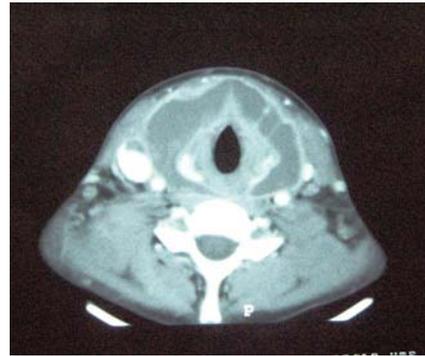


Figure 3. The computed tomography reveals massive cervical hematoma

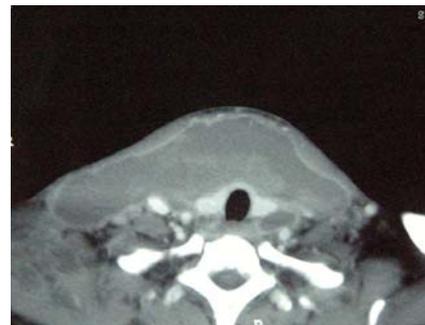


Figure 4. The computed tomography reveals massive cervical hematoma and right internal jugular vein thrombophlebitis



Figure 5. The necrotic and eroded part of internal jugular vein is exposed

DISCUSSION

Deep neck infections remain an important health problem with significant risks of morbidity and mortality, with associated mortality ranging from 1.6% to 40%. If not treated successfully, these infections may spread to the lateral pharyngeal space. From there, infection spreads to the posterior pharyngeal and prevertebral spaces and into the chest (5). Mediastinitis and empyema may ensue, leading to death (6). Alternatively, infection may spread from the lateral pharyngeal space to the contents of the carotid sheath, leading to internal jugular vein thrombosis, subacute bacterial endocarditis, pulmonary emboli, carotid artery thrombosis and cerebrovascular insufficiency, or Horner syndrome (5). Horner syndrome may occur because of involvement of the cervical sympathetics in this space.

The carotid space of the neck is a potential space within the carotid sheath containing the carotid artery, internal jugular vein, vagus nerve, and sympathetic postganglionic fibers. This space may be affected indirectly from spread of infection from the surrounding parapharyngeal space or directly by injection of drugs in those who abuse intravenous drugs (7). The resulting jugular vein thrombophlebitis sends septic emboli to the heart and lungs. The carotid artery may thrombose, form an aneurysm, or erode and rupture. Vascular complications of deep neck infections are less common but they are still present. Alexander et al (3) reported three cases of deep neck abscesses with rupture of major artery. Previous reports would indicate that bleeding secondary to deep neck infections originates much more frequently from the internal carotid artery (3,8). The internal jugular vein thrombosis is a vascular disorder that can follow intravenous drug abuse, central venous catheterization and deep neck infection (9). The pathogenesis of the disorder is based upon Virchow's triad of venous intimal injury, altered blood flow and hypercoagulable blood (8). Hudorovic et al (4) presented a case of vertebral artery, internal jugular vein and subclavian vein rupture after descending necrotizing mediastinitis. The spontaneous cervical hemorrhage occurs rarely. Etiologies of spontaneous cervical hemorrhage and hematoma include infection, trauma, violent head movements, iatrogenic injury associated with cardiac catheterization, foreign body ingestion, hemorrhagic diathesis (10). The internal jugular vein erosion and silent hematoma in the neck due to deep neck infection was not reported before. In deep neck infections, the internal jugular vein is always exposed to the danger of infection. In our case, deep neck infection was spread to carotid sheath and involved the internal jugular vein. After that, there was occurred thrombophlebitis of

internal jugular vein. The infection, thrombosis, tissue necrosis, all lead to exposure of vascular structures, which may lead to weakness of the vessel wall. In our case we believe that, thrombophlebitis and endothelial injury during the drainage procedure was leading to vascular erosion and hemorrhage. While hematoma was forming there was no any hemodynamic changes due to patient's being young adult. Although there was a massive hematoma in the neck self limitation of hematoma occurred due to low venous pressure.

The bacteriologic pattern of deep neck infections is usually polymicrobial, including aerobes and anaerobes (7). According to recent reports, most common organisms seem to be aerobic *Streptococcus Viridians*, β -hemolytic *Streptococci*, *Staphylococcus*, *Klebsiella Pneumonia*, anaerobic *Bacteroides*, and *Peptostreptococcus* (1). In our case, *Staphylococcus Aureus* was isolated organism, consistent with previous reports.

Imaging studies may be useful. Computed tomography is probably the single most useful study in the deep neck infections. It has been shown to have a sensitivity ranging from 95% to 100% in identifying and characterizing deep neck infections (7). Computed tomography is instrumental in distinguishing cellulitis from deep neck abscesses, localization of deep neck abscesses, identification of airway deviation, subcutaneous emphysema and involvement of the carotid sheath or major blood vessels (7).

This paper shows the importance of early diagnosis and probability of hematoma, in the management of deep neck infections. Despite treating a population with significant comorbidities, the combination of early diagnosis, initiation of empiric antimicrobial therapy, and prompt and aggressive surgical intervention resulted in resolution of all cases and no mortality.

REFERENCES

- Huang TT, Liu TC, Chen PR, Tsenq FY, Yeh TH, Chen YS. Deep neck infection: analysis of 185 cases. *Head Neck* 2004; 26: 854-60.
- Jain S, Naqpure PS, Singh R, Garq G. Minor trauma triggering cervicofacial necrotizing fasciitis from odontogenic abscess. *J Emerg Trauma Shock* 2008; 1: 114-8.
- Alexander DW, Leonard JR, Trail ML. Vascular complications of deep neck abscesses. A report of four cases. *Laryngoscope* 1968; 78: 361-70.
- Hudorovic N, Vucetic B. Infrequent life-threatening complication of descending necrotizing mediastinitis; vertebral artery, internal jugular and subclavian vein rupture. *Int J Surg* 2008; 6: 48-51.
- Levine TM, Wurster CF, Krespi YP. Mediastinitis occurring as a complication of odontogenic infections. *Laryngoscope* 1986; 96: 747-50.
- Cohen JP, Persky MS, Reede DL. Internal jugular vein thrombosis. *Laryngoscope* 1985; 95: 1478-82.
- Daramola OO, Flanagan CE, Maisel RH, Odland RM. Diagnosis and treatment of deep neck space abscesses. *Otolaryngol Head Neck Surg* 2009; 141: 123-30.
- Garino JP, Ryan TJ. Carotid hemorrhage: a complication of peritonsillar abscess. *Am J Emerg Med* 1987; 5: 220-3.
- Chowdhury K, Bloom J, Black MJ, al-Noury K. Spontaneous and nonspontaneous internal jugular vein thrombosis. *Head Neck* 1990; 12: 168-173.
- Chin KW, Sercarz JA, Wang MB, Andrews R. Spontaneous cervical hemorrhage with near-complete airway obstruction. *Head Neck* 1998; 20: 350-3.

Gönderilme Tarihi: 04.06.2012