

CASE REPORT

Pulmonary thromboembolism following total laryngectomy and neck dissection: a case report

Total larenjektomi ve boyun diseksiyonu geçiren bir olguda pulmoner tromboemboli

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A fifty-five-year-old male patient underwent total laryngectomy, bilateral modified radical neck dissection, and primary voice restoration for squamous cell carcinoma of the supraglottic larynx. During surgery the left internal jugular vein was found to be thrombosed and, therefore, ligated and resected. In the early postoperative period, pulmonary thromboembolism was suspected and confirmed by lung perfusion scintigraphy which showed bilateral segmental and subsegmental perfusion defects. The patient was successfully treated by anticoagulant therapy. It may be advisable to consider thromboprophylaxis in head and neck surgery in patients with clinically suspected pulmonary thromboembolism, if no contraindication exists.

Key Words: Anticoagulants/therapeutic use; carcinoma, squamous cell/surgery; head and neck neoplasms/surgery; neck dissection; postoperative complications; pulmonary embolism/etiology/drug therapy; risk factors; thrombosis/etiology.

Elli baş yaşındaki erkek hastada supraglottik larenkste skuamöz hücreli karsinom nedeniyle total larenjektomi, iki taraflı modifiye radikal boyun diseksiyonu ve primer ses restorasyonu uygulandı. Ameliyat sırasında, sol internal juguler vende tromboz geliştiğinin gözlenmesi üzerine ven kesildi ve bağlandı. Ameliyat sonrası erken dönemde hastada pulmoner tromboemboliden şüphelenildi. Akciğer perfüzyon sintigrafisinde iki taraflı segmental ve subsegmental perfüzyon defektleri izlendi. Uygulanan antikoagülan tedaviden başarılı sonuç alındı. Baş-boyun cerrahisinde pulmoner tromboemboliden şüphelenilen olgularda, herhangi bir kontraendikasyon yoksa tromboprolaksi uygulamasını dikkate almak gerekebilir.

Anahtar Sözcükler: Antikoagulan/terapötik kullanım; karsinom, skuamöz hücreli/cerrahi; baş-boyun neoplazmları/cerrahi; boyun diseksiyonu; ameliyat sonrası komplikasyon; pulmoner emboli/etyoloji/ilaç tedavisi; risk faktörleri; tromboz/etyoloji.

Patients undergoing major surgical procedures in the presence of known predisposing factors, including orthopedic or gynecologic surgery or major abdominopelvic operations carry a certain risk for deep venous thrombosis (DVT) and pulmonary thromboembolism (PTE). However, in the field of oto-

laryngology and head and neck surgery the incidence of DVT/PTE is considerably low because of relatively short duration of operations and early postoperative mobilization of patients. Yet, the clinician should always be alert to such surgery-associated complications, especially in the presence of certain risk factors.

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CASE REPORT

A fifty-five-year-old male patient had squamous cell carcinoma of the supraglottic larynx. Apart from the existence of chronic obstructive pulmonary disease, physical and laboratory examinations were normal. Cardiovascular system studies and routine electrocardiographic recording revealed no abnormality. He underwent total laryngectomy, bilateral modified radical neck dissection of type III, and primary voice restoration in our department. During operation, multiple lymphadenopathies found in the right upper and middle jugular chains (level II and III) were carefully dissected so as not to injure the right internal jugular vein (IJV). Just as we were about to complete left modified radical neck dissection and total laryngectomy and remove the specimen, we noted that the right IJV was thrombosed. Then, ligation and resection of the right IJV were performed without inducing thrombus propagation. The operation took about six hours, during which blood transfusion of three units was required.

In the early postoperative period, the patient developed tachypnea, dyspnea, and tachycardia developed. Auscultation revealed decreased respiratory sounds in the right lung. Chest roentgenograms and electrocardiograms were normal. Lung perfusion scintigraphy showed bilateral segmental and subsegmental perfusion defects (Fig. 1) suggesting the presence of PTE. Heparin infusion of 1,000 IU/h was started after a bolus of 5,000 IU and continued under controlled partial thromboplastin time (PTT) and prothrombin activity (PTA) values two times daily.



Fig. - 1 Lung perfusion scintigraphy showing bilateral segmental and subsegmental perfusion defects.

Aminophylline was also added for chronic obstructive pulmonary disease. On the seventh postoperative day, warfarin sodium (5 mg 2x1) was begun orally and continued after heparin was stopped at the 10th postoperative day. Warfarin administration was tapered to a single dose daily to be continued for three months with monitoring of PTT and PTA values. The patient was referred to the department of Internal Medicine for further controls.

He had no other problems; following the insertion of voice prosthesis he was discharged on the 14th postoperative day and was referred to the Radiation Oncology department for radiotherapy with pathologic tumor stage determined as T₃N₀M₀.

DISCUSSION

Deep venous thrombosis and PTE are important causes of morbidity and mortality after surgical procedures and have been extensively studied by surgical specialties as orthopedics, gynecology, urology, general surgery, and neurosurgery.^[1,2] However, our literature search in the field of otolaryngology revealed only a few cases in which such complications were encountered. Joffe^[3] was the first to report a patient with asymptomatic DVT in 1976. He attributed the rarity of this complication to minimal tissue trauma occasioned during otolaryngologic surgical procedures and early mobilization of the patients. Later in 1989, Spires et al.^[4] reviewed 502 patients with PTE, 30 of whom had a primary head and neck malignancy. Only five of these patients developed clinically significant PTE in the immediate postoperative period, leading to mortality in three patients. These authors implicated heart disease as the most significant predisposing factor. Lowry^[5] conducted a retrospective survey among maxillofacial surgical units in the United Kingdom, which revealed 60 cases of PTE, 14 of which were fatal, and 64 cases of DVT without progression of PTE. Of the PTE complications, 60% and 25% occurred following operations for orocervical malignancies and maxillofacial traumas, respectively.

More recently, Moerano et al.^[2] investigated the incidence of DVT and PTE in otolaryngology and head and neck surgery. They demonstrated that the development of PTE following major head and neck surgery was 10 times as high as that in general otolaryngology, four times as high as that in trauma and plastic surgery, and twice as high as that in otology and neurotology and the overall specialty.

They examined several risk factors, including the patients' age and weight, duration of surgery, TNM staging, the presence of malignant or benign disease, and the use of thromboprophylaxis. Only age and the use of pneumatic compression devices were found to have a significant role in the incidence of DVT/PTE. Of note, none of the patients developed DVT/PTE following microvascular free tissue reconstruction, probably due to the postoperative use of anticoagulants.

Many risk factors that may be associated with the occurrence of DVT/PTE have been reported: age, a history of prior major operations, antecedent DVT/PTE complications, malignancy, obesity, the presence of varicose veins, preoperative immobilization exceeding three months, long operation duration, postoperative immobilization, heart disease, sepsis, stroke, pregnancy, estrogen therapy, multiple trauma, and inherited pædisposition.^[2] Although patients undergoing major head and neck surgery commonly exhibit some of these factors, the risk for DVT/PTE development is substantially reduced by postoperative early mobilization of patients. Besides, the most common possible sources of PTE are not in our operation field. In our case, prolonged manipulation of the IJV might have resulted in thrombosis.

Regardless of its relative rarity, head and neck surgeons should never ignore the risk for DVT/PTE in surgical otolaryngologic procedures. The development of DVT/PTE is often associated with nonspecific manifestations; therefore, a high index of clinical suspicion is the key element in diagnosis. There are many disorders that mimic PTE, and in the early postoperative period, symptoms of DVT/PTE may be manifested by shortness of breath, chest pain, hemoptysis, hypotension, anxiety, fever, or arrhythmia. Most probably, many minor occurrences of PTE are silent and, therefore, easily overlooked.

Clinical examination, chest roentgenograms, or electrocardiograms alone may not be specific in diag-

nosis, but will be helpful to rule out other disorders. The key investigation in a patient with suspected PTE is lung perfusion scanning evaluated in combination with clinical probability. In general, the presence and severity of PTE is reflected by the size and pattern of perfusion defects.

As there are only a few reports concerning DVT/PTE development after head and neck surgery, the role of thromboprophylaxis has yet to be clarified.^[6] Moreano et al.^[2] and Lowry^[5] recommended thromboprophylaxis especially for patients with risk factors. Toledano-Munoz et al.^[7] reported that preoperative use of low-molecular heparin did not reduce the risk for thromboembolism.

In summary, it may be advisable to consider thromboprophylaxis in patients with clinically suspected PTE if no contraindication exists.

REFERENCES

1. Çelebi F, Balık AA, Yıldırğan MI, Başođlu M, Adıgüzel H, Ören D. Thromboembolic prophylaxis after major abdominal surgery. *Ulus Travma Derg* 2001;7: 44-8.
2. Moreano EH, Hutchison JL, McCulloch TM, Graham SM, Funk GF, Hoffman HT. Incidence of deep venous thrombosis and pulmonary embolism in otolaryngology-head and neck surgery. *Otolaryngol Head Neck Surg* 1998;118:777-84.
3. Joffe SN. Postoperative deep vein thrombosis in otolaryngologic surgery. *Arch Otolaryngol* 1976;102:135-6.
4. Spires JR, Byers RM, Sanchez ED. Pulmonary thromboembolism after head and neck surgery. *South Med J* 1989;82:1111-5.
5. Lowry JC. Thromboembolic disease and thromboprophylaxis in oral and maxillofacial surgery: experience and practice. *Br J Oral Maxillofac Surg* 1995;33:101-6.
6. Ah-See KW, Kerr J, Sim DW. Prophylaxis for venous thromboembolism in head and neck surgery: the practice of otolaryngologists. *J Laryngol Otol* 1997;111: 845-9.
7. Toledano Munoz A, Monux Martinez A, Bernaldez Millan R, Galindo Campillo AN, Gavilan Bouzas J. Thromboembolic prophylaxis in patients with head and neck carcinomas: a risk-benefit study. *Acta Otorrinolaringol Esp* 1999;50:453-7. [Abstract]