Özet

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Abstract
Pulmonary embolism after pneumonectomy is a well-recognised complication but it can be fatal. In this report we present a case of a 59-year-old male patient who admitted to our clinic with suddenly occurred dyspnea and chest pain after right pneumonectomy for lung cancer on 20th day of discharge. Computed tomography pulmonary angiography (CTPA) showed massive pulmonary embolism in the distal part of the left main pulmonary artery and partial-total filling defects in the upper and lower lobe segmenter-subsegmenter arteries. After diagnosis, we started to low molecular weight heparin (LMWH) for treatment twice a day. On sixth day of treatment patient was discharged with uneventful recovery.

Keywords
Pulmonary Embolism; Pneumonectomy; Anticoagulant Treatment
**Introduction**

Pulmonary embolism can be seen after lung resections and it is one of the most severe life threatening complication. In patients who underwent lung resection, pulmonary embolism can cause postoperative deaths. Nagasaki and colleagues reported embolism rates between %15 and %20 after lung resection [1]. So that postoperative follow up and evaluation of symptoms should done carefully after lung resection particularly pneumonectomy. Especially if the stump of the pulmonary artery remain too long, it might predispose to thrombus in the contralateral artery owing to clothing. Early diagnosis and urgent treatment of pulmonary embolism should be performed immediately. It is important to decrease morbidity and mortality rates [2].

**Case Report**

A 59-year-old man had undergone right pneumonectomy for squamous cell carcinoma. He has 80 packet/year smoking, diabetes mellitus, hyperlipidemia and coronary artery disease on his resume. He didn’t have any complication in early post operative period and discharged. On post operative day 20, the patient was admitted to our clinic because of chest pain and dyspnea. On physical examination, he was tachycardic and tachypneic. Saturation on transcutaneous pulse oximetry was 92% on 8 L/min nasal oxygen and arterial blood gas analysis was demonstrated hypoxia and hypocapnia (PO2:48,6mmHg PCO2:28,4 mmHg and O2 saturation: %92,5). Pulmonary embolism was suspected due to high D-Dimer level. CTPA was performed for the evaluation of acute pulmonary embolism. CTPA showed massive pulmonary embolism in the distal part of the left main pulmonary artery and partial-total filling defects in the upper lobe segmenter-subsegmenter arteries (Figure 1). Subcutaneous LMWH Enoxaparine Sodium (Clexane® 6000 anti-Xa ; Sanofi-Aventis) 2 x 0.6 ml was administered to patient. The patient whose symptoms were reduced, discharged from the hospital on 6th day, up to use clexane for 3 months. CTPA performed after sufficient medical treatment showed resolution of pulmonary embolism (Figure 2).

**Discussion**

Most of patients who have malign diseses suffer from coagulation problems such as deep venous thrombosis, peripheral embolism and pulmonary thromboembolism. Mainly risk factors include immobilization, older age, previous surgery, familial disorders as well as malignancy. Pulmoner embolism (PE) which occurs after lung resection for carcinoma has high mortality. Especially after pneumonectomy mortality significantly increases [3]. When sudden chest pain and dyspne occurs on the patients who had no problems after pneumonectomy, pulmonary embolism must be reminded. Early diagnosis and treatment of PE performed immediately. Morbidity and mortality may be decreased with urgent prophylaxis and intervention. We successfully managed the patient who developed PE after pneumonectomy with LMWH.

Early diagnosis can be provided by pulmonary artery angiography, spiral thorax tomography, V/Q scan and echocardiography. Nazerroyillas and Georgiou conclude that echocardiography was useful for diagnosis of PE [4,5]. Transhoracic echocardiography can be performed promptly at bed-side and shows ventricular dilatation, pulmonary artery pressure and ventricular hypokinesis. It predicts acute PE with a sensitivity of % 96 and a specificity of %83 [4]. Paterson and co-worker emphasized role of thorax spiral CT [6]. In many institutions CT is routinely used to diagnose PE and it can safely replace pulmonary angiography. D-dimer is also useful for diagnosis of PE. High level of D-dimer is meaningful but it can be specious in some situations such as pneumonia, previous surgery, malign disorders and sepsis. Electrocardiography also can show PE with S1Q3T3. Transesophageal echocardiography can demonstrate the presence of a thrombus situation within the right atrium [2].

Treatment depends on patient’s situation. Non-surgical treatment for patient in a stable condition or surgical treatment for patient in unstable condition and presence of ineffective thrombolysis should be considered. Non-surgical treatment includes anticoagulant drugs, thrombolytic drugs and inferior vena cava filter. Low-molecular weight heparin is effective for prophlaxia and treatment as well as heparin infusion. Thrombolitic treatment including streptocinase, urocinase and recombinant tissue plasminoogen activator is recommended for treatment of PE but it also carries a high risk of hemorrhage on early postoperative period [3]. Urgent surgical treatment such as embolectomy is also effective. But mortality and morbidity increases with surgery. In the presence of massive embolism when thrombolytic treatment is uneffective surgical embolectomy or embolectomy with angiocatheter is adequate, while in the case anticoagulation therapies are contraindicated vena cava filters may be used.

Major complications of heparine treatment are bleeding, heparine induced thrombocytopenia and osteoporos. Especially bleeding is an important cause of mortality. So it must be used varefully on patients who underwent surgery. LMWH
are made by depolarization of heparine. It’s half-life is two to four times longer than heparine. It’s applied two times a day by fixed doses. It doesn’t require dose arrangement and control of APTT, trombocytopenia and osteoporosis are seen less highly. It can be used safely on patients underwent surgery, because of less bleeding complications [7]. There isn’t important difference about the effectiveness. Meanwhile in the case LMWH are used there is less risk for recurrent embolism, but the important point is that for this treatment patients performance should be fine enough, because this treatment modality is not recommended for patients whom performance is poor and who has massive embolism, severe obesity or renal failure [8].

As a result, embolism which occurs after lung resections are threat to life and it requires urgent treatment with early diagnosis. On patient who has risk factors for embolism, LMWH should be used for prophylaxis. On the other hand for avoiding from embolism some precautions such varis socks and mobilization should be taken. Especially, patients who underwent pneumonectomy or lobectomy should being followed up carefully on postoperative period. If embolism has occured in such patients, LMWH can be used safely, and it is as effective as heparine.

References