

A new possible acquired risk factor for pulmonary embolism: Colonoscopy procedure

Pulmoner emboli için kazanılmış olası yeni bir risk faktörü: Kolonoskopi işlemi

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ABSTRACT

Knowing the risk factors of PE contributes to the promptness of diagnosis and treatment. Although most patients with pulmonary embolism (PE) have acquired or hereditary risk factors, the cause of PE is unknown in one-quarter of patients. We describe a 66-year-old man who presented with chest pain, dyspnea, and hemoptysis one day after he had a colonoscopy performed due to chronic constipation complaints. The computed tomography pulmonary angiography revealed thrombus in the left peripheral pulmonary artery. He did not have any risk factors for PE, and a hypercoagulable workup was normal. Because of his development of PE one day after his colonoscopy and the absence of any risk factors, the colonoscopy could have caused the PE. PE may be caused by increased intra-abdominal pressure during this procedure. This is the first case of PE following a colonoscopy in the literature. We recommend that patients with idiopathic PE should be questioned aspect of invasive procedures such as colonoscopy.

Key words: Pulmonary embolism; risk factor; colonoscopy

INTRODUCTION

Colonoscopy is expansively used for diagnosis of colorectal pathology and carries low risk complication. Hemorrhage and perforation of the colon have been reported as the most common complications. Extra-colonic or visceral damages, including pneumothorax pneumomediastinu, and other are much less common [1].

ÖZET

Pulmoner emboli (PE) için risk faktörünün bilinmesi, bu hastalığın erken tanı ve tedavisinin düzenlenmesine önemli katkı sağlamaktadır. Pek çok hastada akkiz veya kalıtsal risk faktörü bulunmasına rağmen, bu hastaların ¼ de herhangi bir risk faktörüne rastlanılmamaktadır. Kronik kabızlık nedeniyle kolonoskopi uygulanmış 66 yaşında erkek hasta, işlemden bir gün sonra dispne, göğüs ağrısı ve hemoptizi şikâyetleri gelişmesi üzerine kliniğimize başvurmuştu. Çekilen bilgisayarlı tomografi pulmoner anjiyografide sol pulmoner arter periferik dalında trombus saptanması üzerine hasta PE olarak değerlendirildi. Hastada herhangi bir kalıtsal ya da akkiz risk faktörü yoktu. İşlemden hemen sonra gelişmesi, bilinen bir risk faktörünün olmaması nedeniyle PE'nin kolonoskopiye bağlı gelişmiş olabileceği düşünüldü. İşlem sırasında artmış intraabdominal basınca bağlı olarak PE gelişmiş olabileceğini düşünüyoruz. Olgumuz kolonoskopi işlemi takiben gelişmiş ilk PE olgusudur. Nedeni bilinmeyen PE hastalarının kolonoskopi gibi invaziv işlemler açısından sorgulanmasının uygun olacağını düşünüyoruz.

Anahtar kelimeler: Pulmoner emboli; risk faktörü, kolonoskopi

Despite the advances in the diagnosis and management of venous pulmonary thromboembolism, pulmonary embolism (PE) remains an important cause of morbidity and mortality [2]. Although the mortality of untreated patients is approximately 25-30%, mortality is reduced to 2-8% in treating patients [3,4].

In clinical practice, the physicians encounter many patients with PE. In addition, as the all other

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disease, knowing the risk factors of PE or the formation of emboli as a complication of some processes (such as colonoscopy) contributes to a prompt diagnosis and treatment. Therefore, the physicians should be aware of all possible risk factors for PE.

Although PE can occur in patients without any determinable predisposing factors, one or more of these factors, which are acquired or hereditary, are usually recognized [3-6]. The proportion of patients with idiopathic or unprovoked PE was about 25 % [3,5,7]. In this article, a certain invasive procedure, colonoscopy was proposed as possible causes of PE.

CASE REPORT

A 66-year-old white male who presented with chest pain, dyspnea, and hemoptysis was admitted to the emergency department of our hospital. The patient was referred to the department of pulmonology. All vital signs were normal. Body mass index was 26. The D-dimer assay using latex agglutination was reported up to 2860µg/L (reference range: 0-5). Hemogram and biochemical parameters were normal. The computed tomography pulmonary angiography was performed, and a consistent filling defect by a thrombus was observed in the left peripheral pulmonary artery (Figure 1). The echocardiogram showed normal right cavities, and pulmonary artery pressure (PAP) was 45 mmHg. No evidence of deep vein thrombosis was found in the subsequent duplex ultrasound examination of his lower extremities at that time. The patient was considered as having a PE. The patient was initially hospitalized and treated with therapeutic dose of weight-based subcutaneous low molecular weight heparin (enoxaparin) while it was converted to oral vitamin K antagonist (warfarin sodium) therapy. After treatment, the patient's clinic situation dramatically improved. The patient had no acquired risk factors of PE. Hematological studies that included anti-phospholipid antibody, lupus anticoagulant, anti-thrombin III, protein C, protein S, anti-cardiolipin antibody, homocysteine, APC-resistant factor V, PT 20210, and factor V Leyden were all normal. In addition, there was no history of smoking. However, a colonoscopy was performed due to the dyspeptic and chronic constipation complaints one day before PE diagnosis, and it was evaluated as normal. In addition, the abdominal CT was normal. Thus, No occult cancer could

be detected. After three months of anticoagulation therapy, treatment was discontinued. At the time of discontinuation of treatment, PAP was 20 mmHg. At the 2-year follow-up, he does not have any health problems. The patient's informed consent was obtained.



Figure 1. Computed tomography pulmonary angiography shows the filling defect on peripheral branches of the left pulmonary artery

DISCUSSION

Currently, colonoscopy is a crucial method for diagnosis and treatment of any colorectal disease. In the majority of cases, it is a safe, tolerated, and easily obtainable procedure. Therefore, using colonoscopy has shown a gradual increase. Generally, any complications after colonoscopy are rare [1]. So far, in the English and Turkish literature, there is no reported any PE case after colonoscopy.

On the other hand, in the diagnosis of diseases, it is very important to know the risk factors. Many acquired and hereditary risk factors play a role in the etiology of PE. The factors causing intravascular coagulation were detected by Virchow in 1856 as follows: "1- Vascular endothelial damage 2-Hypercoagulable 3-Staz." Of the 75% of the PE patients, acquired and/or hereditary factors causing one of these three conditions are detected [3-6]. The occult cancer and thrombophilia risks are higher in patients with undetected risk factors [3,4]. However, no reason is detected at the 25% of the PE patients, and they were considered as idiopathic [7,8]. Previously

unrecognized cancer, present in 7-12 % of patients with idiopathic PE, can usually be identified by a combination of careful clinical evaluation, routine blood tests, and chest radiography, but the current consensus is the recommendation that it is not suitable to proceed with tests such as ultrasound, computed tomography, or endoscopy [3,9,10].

In our case, there were no acquired (including the long travel) and hereditary risk factors for PE. In addition, the body mass index of this patient was normal. He has no history/family history of thrombophilia, and smoking. He has not any occult cancer. However, a colonoscopy was performed because of dyspeptic and chronic constipation one day before PE formation, and it was assessed as normal. The anticoagulant treatment was discontinued at the end of the third month of treatment. The genetic risk factors including protein C/S, anti-thrombin III, and activated protein C resistance were examined in the second week after the cessation of anticoagulant therapy. These factors were normal. Because of the development of PE one day after the colonoscopy and the absence of any risk factors of PE in this patient, we have considered that the colonoscopy procedure could have caused the PE. It is not clear that which mechanism of the colonoscopy procedure could have caused the PE. The increased intra-abdominal pressure during a colonoscopy procedure may enhance the venous stasis of the intra-abdominal vein, and thus PE could have occurred. Previously, it has been shown that increased intra-abdominal pressure may cause PE via increasing venous stasis in patients undergoing a laparoscopic surgery procedure [11-14]. In one of these cases, PE was detected in a 47-year-old female patient following a laparoscopic ovariectomy [11]. This was a case with massif PE. The current case was submassif PE because PAB was 40 mmHg. Similar to our patient, for this case, there was no evidence of deep vein thrombosis in the subsequent duplex ultrasound examination of her lower extremities at the time of diagnosis. In another study, it was shown that PE occurred in two patients after a laparoscopic surgery; one patient underwent umbilical hernia repair and the other cholecystectomy [13]. Also, deep venous thrombosis and PE as a complication of laparoscopic surgery have been reported in multiple case reports and individual series [13,14]. Increased

intra-abdominal pressure with other mechanism such as increased ventilator pressure, and the vasodilator effects of hypercarbia with anesthesia during the laparoscopic procedure might have caused PE in all of these cases [14]. Really, laparoscopic operation and colonoscopy are different procedure. Nevertheless, as during laparoscopy, it is likely to increase the intra-abdominal pressure during colonoscopy and may be damaged veins in this area. Thus, PE could be occurred.

To the best of our knowledge, no cases of PE following a colonoscopy procedure have been reported to date. This is the first such case. Although the mechanism of PE formation in this patient is not clear, increased intra-abdominal pressure could have been the cause.

In conclusion, it should be kept in mind that a colonoscopy procedure is a possible risk factor for patients with idiopathic PE. However, whether or not the difference in the incidence of PE before and after colonoscopy should be investigated in future studies. On the other hand, if the colonoscopy as a risk factor of PE is shown by a series of cases, prophylaxis may be considered before this procedure.

Conflict of interest: No conflict of interest

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