The Mystery Hidden by Pulmonary Embolism: Colonic Adenocarcinoma

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ABSTRACT

Despite the fact that the association between cancer and pulmonary embolism is well recognised, screening for malignancy is not conducted routinely. However, screening for malignancy can be life-saving for some patients. We present the case of a 53-year-old woman who was diagnosed with pulmonary embolism and concomitant idiopathic venous thromboembolism (VTE) without any prominent risk factors for a hypercoagulative state. Clinical and laboratory tests were used to detect the potential causes of idiopathic VTE, such as occult cancer. Consequently, abdominal magnetic resonance imaging and computed tomography revealed caecal tumour. Pathological test results indicated early-stage colonic adenocarcinoma. Right hemicolectomy was performed by general surgery and the patient was discharged from the hospital without any problems. Although there has been no consensus about screening for an occult malignancy routinely in idiopathic VTE, occult cancer should be considered in unexplained hypercoagulative states.

Key Words: Pulmonary embolism; colonic adenocarcinoma/diagnosis; idiopathic venous thromboembolism; occult cancer

Pulmoner Emboli Tarafından Saklanan Sır: Kolon Adenokarsinomu

ÖZET

Kanser ve pulmoner emboli birlikteliği ve aralarındaki ilişki iyi bilinmesine rağmen, kanser taraması klinik pratikte rutin olarak yapılmamaktadır. Ancak, pulmoner emboli tanısıyla gelen olgularda malignite araştırılması bazı hastalar için hayat kurtarıcı değerde olabilmektedir. Pulmoner emboli ve idiyopatik venöz tromboemboli (VTE) tanısı alan ve pıhtılaşma eğilimi yönünden risk faktörü bulunmayan 53 yaşındaki kadın hastayı sunduk. İdiyopatik VTE nedenlerini özellikle altta yatan olası bir kanseri saptayabilmek için klinik ve laboratuvar araştırmaları yapıldı. Sonuç olarak, çekum tümörü abdomen manyetik rezonans görüntüleme (MRG) ve abdomen bilgisayarlı tomografi (BT) kullanılarak gösterildi. Patoloji sonucu erken evre kolon adenokarsinomu olarak raporlandı. Genel cerrahi kliniği tarafından sağ hemikolektomi uygulandı ve hastaneden sorunsuz bir şekilde taburcu edildi. İdiyopatik VTE ile ilişkili altta yatan gizli kanser yönünden araştırılma konusunda net bir fikir birliği bulunmamasına rağmen, açıklanamayan pıhtılaşma eğiliminin olduğu olgularda gizli bir kanser açısından değerlendirme yapılmalıdır.

Anahtar Kelimeler: Pulmoner emboli; kolon adenokarsinomu/tanı; idiyopatik venöz tromboemboli; gizli kanser

INTRODUCTION

Malignancy is one of the reasons of pulmonary embolism or deep-vein thrombosis. In most patients with occult cancer, the cancer is accompanied by idiopathic venous thromboembolism (VTE)[1]. The association between VTE and cancer has been well known, and the primary factor responsible for cancer-induced VTE is considered to depend on a hypercoagulative state induced by the cancer itself[2]. Hence, there should be a clinical suspicion for occult cancer in case of a patient who has been manifested as an isolated pulmonary embolism. The accuracy of this assessment was demonstrated through this case report.

CASE REPORT

A 53-year-old woman presented with fatigue and progressive dyspnea for the last 6 months. Her respiratory symptoms worsened over the last couple of days. There were no significant features in her medical history, except hypothyroidism. On her first examination, she had tachycardia (112 beats/min) and tachypnea (26 beats/min). Her body mass index was normal. On auscultation, her lungs were usual and the pulmonary valve component on the second heart sound was harsh.

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Her laboratory findings showed that the liver and haematological tests were abnormal. Alanine aminotransferase and aspartate aminotransferase levels were noted to increase five-fold approximately. She had microcytic anaemia (haemoglobin= 11.1 g/dL, mean corpuscular volume: 70.7 fl). In addition, haematological analysis showed that she had leukocytosis with the dominance of neutrophils and thrombocytopenia (white blood cells: 11.170/µL, polymorphonuclear leukocytes: 81.2%, platelets: 106.000/µL). Oxygenated blood gas analysis showed a pH of 7.51, PO_2 of 130 mmHg, PCO_2 of 22.4 mmHg, oxygen saturation of 97.7% and HCO_3 of 27.4 mEq/L. There were no significant findings except sinus tachycardia and an incomplete left bundle-branch block on the electrocardiogram. Echocardiography demonstrated a preserved systolic function and an enlargement of the right side of the heart. The estimated pulmonary artery systolic pressure was 60 mmHg, with normal ejection fraction. The D-dimer level was over 5000 ng/mL. Therefore, pulmonary computed tomography (CT) angiography was required to confirm the definitive diagnosis. The angiography revealed massive pulmonary embolism bilaterally (Figure 1). The patient was admitted to the hospital, and unfractionated heparin was initiated.

Etiologic research for pulmonary embolism was started after her admission. Doppler ultrasound was performed, which detected left deep-vein thrombosis. The reasons for the predisposition to hypercoagulation were not clearly understood. Because there were no prominent risk factors for deep-vein thrombosis such as major surgery, poor mobility, advanced age or smoking in this condition, some genetic disorders that are related to procoagulant state, such as protein C, protein S deficiency and factor V Leiden mutation, were investigated. There were no abnormal results on genetic tests.

Fever was observed on the third day of her hospitalisation. There was no propagation of a specific micro-organism in hemocultures and the infection markers were normal; therefore, an underlying malignancy investigation was required. No pathological findings were observed on breast examination. Microcytic anaemia was caused due to an iron deficiency, which was supported by ferritin tests. Obstetrics and gynaecology consultation showed that there was no uterine bleeding, which can cause anaemia, but liquid deposition was detected in rectouterine excavation. Carcinoembryonic antigen (CA)-125 levels were increased. Smear tests were normal.

Symptoms related to gastrointestinal system such as nausea and lack of appetite occurred during the second week of her hospitalisation. Nevertheless, there were no pathological findings on abdomen examinations, and she had no difficulty in defecation. Due to liquid collection in rectouterine excavation, anaemia and gastrointestinal symptoms, abdominal magnetic resonance imaging (MRI) was performed and an irregular mass of about 4 cm diameter was detected at the caecum (Figure 2). The patient was assessed by general surgery and was transferred to a surgery clinic after the diagnosis of caecal tumour. To confirm the diagnosis, abdominal CT was performed and an irregular wall thickness as a massive view at the level of an ascending colon and an ileocaecal region were observed (Figure 3). Right hemicolectomy was performed on the patient diagnosed with caecal tumour. The pathological samples resulted in early-stage colonic adenocarcinoma (Figure 4).

The patient had no problems during the pre- and post-operative periods. She was discharged from the hospital after 42 days of admission without any problems. Cancer development was prevented due to early diagnosis.

DISCUSSION

Pulmonary embolism can present in various manners, ranging from acute hypoxia due to huge proximal embolism or slowly developing pulmonary hypertension. We diagnosed pulmonary embolism with the help of echocardiography and high D-dimer levels when the patient was first presented to us. We initiated the treatment for pulmonary embolism. Subsequently, we investigated the reasons for pulmonary embolism and deep-vein thrombosis in young females. The main causes were eliminated by contribution of medical history, physical examination and laboratory findings. We renamed the

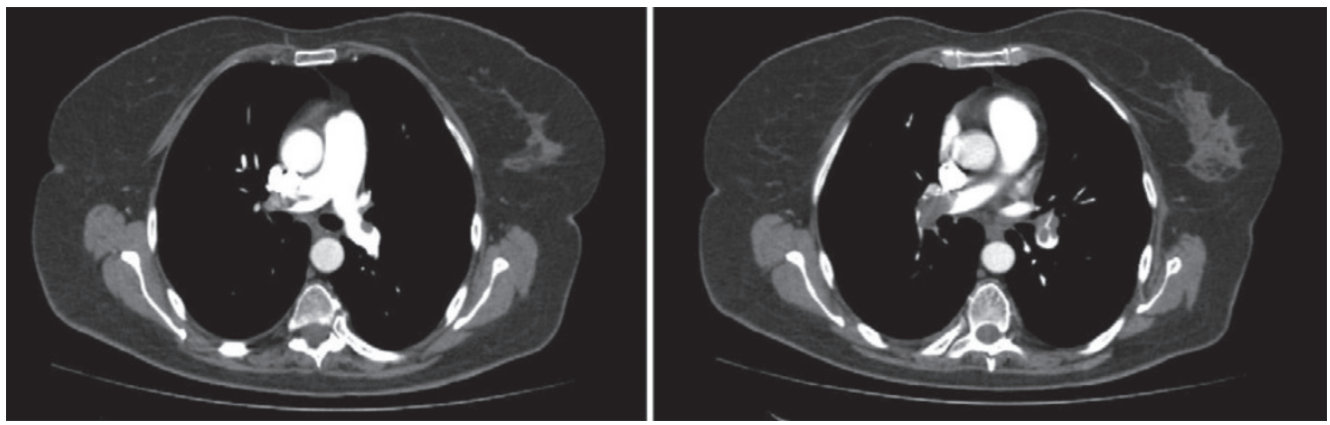


Figure 1. Bilaterally massive pulmonary embolism.

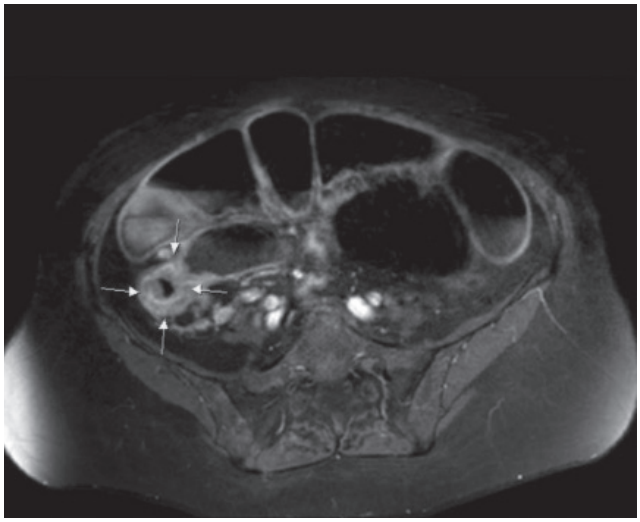


Figure 2. Irregular mass with a diameter of about 4 cm at the caecum.

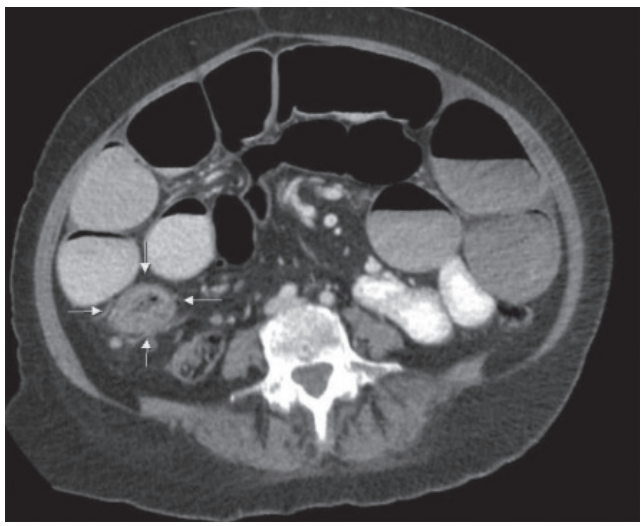


Figure 3. Irregular wall thickness as a massive view at the level of the ascending colon and ileocaecal region.

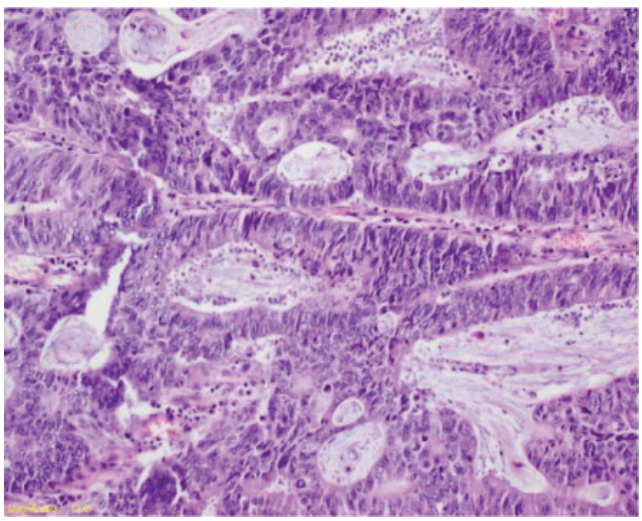


Figure 4. Colonic adenocarcinoma.

case as that of an idiopathic VTE. In addition, accompany of anaemia, occurrence of gastrointestinal symptoms (nausea, lack of appetite) and unexplained fever were showing us it may be caused by systemic diseases such as malignancies. We proceeded with the help of gynaecology and general surgery; abdominal MRI and CT revealed early-stage caecal tumour. In other studies, there have rarely been case reports of colonic carcinoma presenting the manifestation of pulmonary embolism[2,3]. Two early-stage synchronous malignancies, colonic cancer and multiple myeloma, were revealed by previous investigators through the screening of cancer after the diagnosis of idiopathic VTE[3]. Unlike the previous cases, our patient was a 53 years old female and had no additive malignancy. Therefore, we need to emphasise that the prothrombotic risk in our case was lower than in the previous defined case reports.

Patients with pulmonary embolism or deep-vein thrombosis are candidates for occult malignancies. There has been a prospective cohort follow-up study in consecutive patients with acute VTE. The study was conducted with 864 patients, and 34 of them (3.9%) had malignancies[1]. Most patients with occult cancer were aged more than 70 years. In another study, the standardised incidence ratio was 4.4 for cancer at 1 year after VTE diagnosis[4]. Furthermore, determined cancers were generally diagnosed at an early stage. The main risk factors for occult cancer are old age, anaemia and idiopathic deep-vein thrombosis[5]. In our case, anaemia and idiopathic VTE along with unexplained fever were the reasons for screening for occult cancer. Patients with idiopathic VTE appear to have a 3-19-fold increased risk of concomitant cancer[6].

The association between VTE and malignancy was initially identified by Trousseau[7]. Mucin-producing cancers are often associated with VTE[8]. Our pathological diagnosis was also adenocarcinoma and this hypothesis has been supported by our case report. Surgery for cancer, age, and hormonal treatment and chemotherapy play synergistic roles about the progression of thrombosis in patients diagnosed with cancer[8]. Patients undergoing surgery for cancer carry a higher risk of post-operative VTE. The risk of recurrence after the first episode of VTE is higher in cancer patients than in those without underlying malignancy[9].

There should be a complete assessment for patients with idiopathic VTE eventually. Tumour markers, CT, MRI and related clinical consultations can be necessary in this process. Nevertheless, there is no consensus about the extensive and intensive screenings for cancer in patients with idiopathic VTE[3,5,8]. Cost-effective processes and relatively short life expectancy for cancer patients are the major reasons behind the uncertainty for occult malignancy screening with idiopathic VTE. Therefore, we identified early-stage caecal tumour in case of a female patient who was first diagnosed with pulmonary embolism. This case demonstrated that there should be a clinical suspicion for malignancy about the underlying cause of idiopathic VTE and pulmonary embolism.

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