Case Report

# Acute pulmonary embolism complicating deep vein thrombosis in a young patient with stroke

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**ABSTRACT**

*Acute pulmonary embolism is one of the most common causes of vascular death after myocardial infarction and cerebrovascular accidents. It usually presents with severe chest pain and shortness of breath and occasionally occurs in the background of deep vein thrombosis. A 32-year-old male presented with swelling of left lower limb and shortness of breath. Subsequent investigations revealed that he developed DVT of left lower limb and pulmonary embolism. However, in general, if left untreated, pulmonary embolism is associated with an overall mortality of up to 30 percent compared with 2 to 11 percent in those treated with anticoagulation. Early diagnosis by D-dimer, computed tomograpgy pulmonary angiogram and doppler study of the left lower limb and prompt intervention through low molecular weight heparin and rivaroxaban led to a successful outcome in our case.*

***Key words:*** *CT pulmonary angiogram, deep vein thrombosis, pulmonary embolism.*

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## INTRODUCTION

Acute pulmonary embolism (PE) is a form of venous thromboembolism (VTE) that is common and sometimes fatal. The clinical presentation of PE is variable and often nonspecific making the diagnosis challenging. The evaluation of patients with suspected PE should be efficient so that patients can be diagnosed and therapy administered quickly to reduce the associated morbidity and mortality. The incidence of PE is around 0.5-1 cases per 1000.[1] Study shows that about 70% of proven post mortem cases of PE are not even suspected during treatment.[2] Here, we present a case of PE with DVT, diagnosed and treated in a tertiary care hospital of Bangladesh.

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## CASE REPORT

A 32-year-old male was admitted at the Department of Respiratory Medicine, Bangabandhu Sheikh Mujib Medical University with the complaints of left lower limb swelling for two months and shortness of breath (SOB) for one month. Three months ago he was admitted to a tertiary care hospital due to hemorrhagic stroke. Physical examination revealed pulse 96 b/m, regular, BP 100/85 mmHg, respiratory rate 28 breath/min, mild pitting oedema on the left leg and features of right-sided pleural effusion. His oxygen saturation was 95% in room air.

Initial investigation showed haemoglobin 10.9 mg/dl, white blood cell $9\times10^9$/L, platelet $330\times10^9$/L, erythrocyte sedimentation rate 25 mm in 1st hour, prothrombin time with international normalized ratio 1.10, activated partial thromboplastin time 30 seconds, D-dimer 7.98µg/ml (< 0.50), chest X-ray showed right-sided pleural effusion (Figure 1), electrocardiogram showed sinus tachycardia and echocardiography revealed normal. Doppler study of the left lower limb vessels revealed occlusive thrombus to left common femoral, popliteal, anterior tibial, posterior tibial and distal great saphenous vein

(Figure 2). CT pulmonary angiography showed thrombus at the bifurcation of right main pulmonary artery extending up to its descending branch causing moderate luminal narrowing (Figure 3). The patient was treated with low molecular weight heparin (LMWH) and other supportive care. The patient improved gradually over one week. Then the patient was put on oral anticoagulant, rivaroxaban.

**Figure 1** Chest X-ray revealed right sided pleural effusion

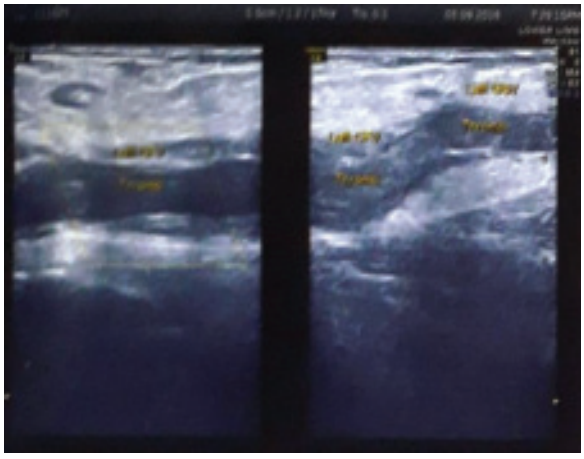

**Figure 2** Doppler study of the left lower limb showed occlusive thrombus

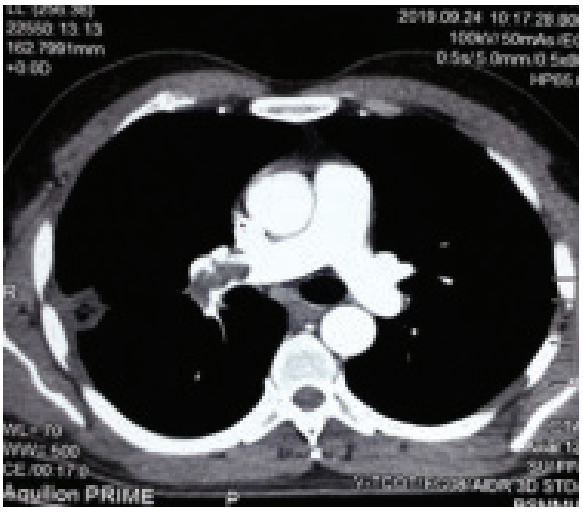


**Figure 3** Computed tomography pulmonary angiogram showed thrombus at the bifurcation of right main pulmonary artery

## DISCUSSION

Our case was a young male with acute PE and DVT, who presented with shortness of breath and unilateral limb swelling. PE refers to occlusion of the pulmonary artery or one of its branches by thrombus, tumor, air, or fat that originated elsewhere in the body. The pathogenesis of PE is similar to that of deep venous thrombosis. Most emboli arise from lower extremity proximal veins (iliac, femoral, and popliteal). The early fatality of PE is high and that occurs in up to 15% of patients. PE is often asymptomatic. Common signs and symptoms of PE are shortness of breath, chest pain, cough, hemoptysis, syncope, fever and unilateral lower limb swelling. In our case, the patient presented with SOB and left lower limb swelling, which is a common presentation of PE. In most of the cases, chest X-ray show normal but often shows raised hemidiaphragm, opacity, pleural effusion.[3] The chest X-ray of our patient showed right-sided pleural effusion and there was no other abnormalities. ECG may show sinus tachycardia, T wave inversion and S1Q3T3 pattern.[4] In this case, the ECG showed only sinus tachycardia. D-dimer is used as a screening test in patients with suspected PE. The negative predictive value of D-dimer is very high and the normal level virtually excludes the PE and our patient has an elevated D-dimer level. CT pulmonary angiography is the choice of investigation for diagnosis of PE.[5] The sensitivity and specificity of CT pulmonary angiography

are very high and it is 83% and 96%, respectively.[6] Right ventricular dilatation and presence of thrombi in right ventricle are important findings in echocardiography. In 30-50% of cases, the Doppler study of the lower limb shows DVT. In our case, we had a PE and DVT due to prolonged immobilization after haemorrhagic stroke. Studies showed that more than 48 hours of immobility in the preceding months have a chance to develop DVT or PE about 45 percent.[7] Early diagnosis and management led to a successful improvement in our case.

## Conclusion

We present a case of acute PE and DVT with a strong index of suspicion. Diagnosis of PE requires high clinical suspicion. Hence, young patients presenting with acute onset of dyspnoea should be evaluated for the common cause of dyspnea but PE should be kept in mind, so as not to miss this fatal disease. Patients treated with unfractionated heparin and/or warfarin should be monitored for laboratory evidence of therapeutic efficacy. Patients should also be monitored for early (eg, recurrence) and late (eg, chronic thromboembolic pulmonary hypertension) complications of PE, as well as for the complications of anticoagulation and other definitive therapies.

**Authors' contribution:** MMR, AIK, SI, RC, AKMMH were involved in diagnosis, patient management and manuscript writing. FBH was involved in manuscript writing. All authors read and approved final manuscript for submission.

**Conflicts of interest:** Nothing to declare.

**Consent:** Informed written consent was taken from patient regarding publication of this case report.

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