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Case Report

Thrombus-in-Transit: Changing the Diagnosis from Acute Coronary Syndrome to Pulmonary Embolism

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Introduction

Pulmonary embolism is a disease entity that is under diagnosed, frequently overlooked,is often misdiagnosed and it is potentially fatal. A high index of clinical suspicion is required for correct diagnosis and timely intervention. To witness the event of embolism is extremely rare and is virtually confirmatory of the diagnosis. Here we present a case of a 56 years old male who was admitted to the emergency department with the diagnosis of Non-ST elevation myocardial infarction; the diagnosis was subsequently changed to pulmonary embolism when a thrombus-in-transit was witnessed on transthoracic echocardiography.[1,2]

Case Report

Fifty six years old male, a chronic smoker and cab driver by profession, was admitted via the emergency department with the complaints of chest pain and dyspnea. He was tachycardic, tachypneic and normotensive. ECG revealed ST segment depressions in the lateral leads and T-wave inversions in V1-V3. His troponin-I was raised. He was admitted with the diagnosis of Non-ST elevation myocardial infarction.Cardiac catheterization was planned. A pre-procedural transthoracic echocardiography was performed. It revealed dilated right sided cardiac chambers, depressed RV systolic function, hypokinesis of the mid-free wall of the RV with normal motion of the apex and normal left ventricular function. During the study a large, free floating thrombus was visualized, moving from the right atrium to the right ventricle and then into the pulmonary artery (Figures 1-6).The patient was immediately shifted for a CT pulmonary angiogram and CT coronary arteriogram. It revealed large acute pulmonary emboli in both the right and left pulmonary trunks and sparing of the main pulmonary artery. Coronary arteries did not have significant disease.

Emergent thrombolysis was initiated with streptokinase; 250,000IU over one hour followed by 100,000IU/hour for the next 24 hours. It led to the improvement of his symptoms and clinical signs. A venous doppler ultrasound of the lower limbs revealed deep venous thrombosis in the right leg. Thrombophilia screening was negative. He was anti-coagulated with warfarin later and discharged upon stabilization.

Figure 1. Mobile thrombus in right atrium

Figure 2: Mobile thrombus traversing the tricuspid valve

Figure 3: Mobile thrombus moving in to the right ventricle from the tricuspid valve

Figure 4: Mobile thrombus in right ventricle, near the free wall

Figure 5: Mobile thrombus in right ventricle, adjacent to the interventricular septum

Figure 6: Mobile thrombus at the apex of the right ventricle

Discussion

Thrombus in transit (also known as right heart thrombus and mobile right cardiac thrombus) is still a rare finding in an era when pulmonary embolism is being diagnosed more frequently than before. These thrombi most often cause pulmonary embolism but can also be a cause of paradoxical embolism and it's sequelae. (4) Echocardiography is the most frequently used imaging modality for making the diagnosis of thrombus in transit. [3, 7]

The mortality rate of acute in-hospital pulmonary embolism is about 2%. However, for a thrombus in transit causing pulmonary embolism this figure approaches 28%. [6] These patients have a greater degree of RV systolic dysfunction with worse hemodynamics and subsequently, outcome and prognosis. [3, 6] This highlights the importance of recognizing this entity and initiation of prompt treatment. [5]

Treatment modalities include intravenous thrombolysis, catheter based thrombolysis, surgical embolectomy and anti-coagulation only. Opinions are divided as to the best and most effective mode of treatment. [6] Another consideration for the choice of the therapeutic modality is the severity of pulmonary embolism and the resultant hemodynamic compromise. Clinical risk stratification scores (Well's score, PERC, Geneva) help in choosing the best treatment strategy. [8, 9] High-risk patients derive the greatest benefit from aggressive treatment; thrombolysis, catheter based thrombolysis or embolectomy.[10] Intermediate risk patients can be managed with thrombolysis alone. Low risk patients can be anti-coagulated only.

Long term anti-coagulation following an episode of pulmonary embolism should be initiated after initial treatment and stabilization and should follow the current guidelines. It is reiterated that this disease is potentially fatal. Prompt recognition and treatment gives the best chance of survival and recovery to the patient. All available modalities should be used for diagnosis. Both, emergency physicians and specialists alike, should have an accurate know how of the clinical and diagnostic signs (even the rarest ones) pointing towards the correct diagnosis.

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