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Pulmonary embolism masquerading as refractory supraventricular tachycardia: A case report

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Abstract

Supraventricular tachycardia (SVT) may be associated with pulmonary embolism (PE) and if the underlying diagnosis of PE is missed, the arrhythmia may tend to recur. We present a case of refractory SVT which was due to PE in a patient with ovarian malignancy in the postoperative period. Malignancy is a risk factor for deep vein thrombosis (DVT) and the risk is increased in the postoperative period after prolonged oncological surgeries. This report highlights the need for a high index of suspicion when we encounter refractory cardiac arrhythmias in the perioperative period in patients with increased risk for DVT.

Keywords: supraventricular tachycardia; refractory; pulmonary embolism; malignancy

Introduction

Pulmonary embolism (PE) has various clinical presentations but cardiac arrhythmias associated with PE is rare and dangerous as it may be easily overlooked in elderly and cancer patients by ascertaining the cause to be underlying coronary artery disease or cardiac injury due to chemotherapeutic agents. Our patient belonged to the high-risk category for venous thromboembolism and hence workup was directed towards ruling out pulmonary embolism in spite of a negative Compression ultrasound of leg veins and a normal echocardiogram.

Case Presentation

A 62 years old lady with history of systemic hypertension and body mass index (BMI) of 31 was admitted with ovarian malignancy. She underwent cytoreductive surgery with pelvic lymphadenectomy under general anaesthesia and epidural analgesia. The duration of surgery was four hours and low dose noradrenaline (0.1mcg/kg/min) was started in the intraoperative period to correct hypotension. Postoperatively, pharmacological and mechanical thromboprophylaxis were initiated. Early ambulation could not be done on the first postoperative day due to pain and need for vasopressor support. She was weaned off vasopressor support on postoperative day 2. On the same day, she developed atrioventricular nodal re-entrant tachycardia (AVNRT) with a heart rate of 170 beats per minute, with no hypotension or fall in oxygen saturation. There was no response to carotid massage and we administered intravenous adenosine 6 mg, which was repeated three minutes later. There was a transient return to sinus rhythm for a few minutes and she reverted back to AVNRT. Intravenous adenosine 12 mg was given, followed by intravenous diltiazem 5 mg and intravenous metoprolol boluses of 1 mg up to a total of 5mg. Further doses of atrioventricular node blockers were avoided seeing the unresponsiveness to the different classes of drugs. She gradually showed signs of respiratory distress with tachypnoea (respiratory rate of 32 breaths per minute) and complained of mild chest discomfort. So we initiated non-invasive ventilation and sent blood for Troponin I, D-dimer and serum electrolyte levels. Troponin I level was marginally raised, D-dimer level was more than 10000 and serum electrolytes were within the normal limits. Lung ultrasound showed minimal basal atelectasis and compression ultrasound of leg veins showed no evidence of deep vein thrombosis. Echocardiogram did not show right ventricular enlargement, hypokinesia or tricuspid regurgitation. In view of the high D-dimer values and respiratory distress, pulmonary angiography was done which showed emboli in left lower segmental and subsegmental branches of left pulmonary artery. Therapeutic anticoagulation was started with subcutaneous enoxaparin 60 mg twice a day. Cardiac rhythm reverted to normal sinus rhythm the same day. There were no further episodes of AVNRT and she was weaned off non-invasive ventilation after two days. She was started on oral anticoagulation and discharged from hospital.

Discussion

Pulmonary embolism has a higher incidence in cancer patients and the incidence is increased with surgery, chemotherapy, radiotherapy and disease progression [1]. This occurs because cancer cells are capable of activating coagulation cascade and other prothrombotic properties of host cells [2].

Our patient had undergone a major abdominal surgery for ovarian malignancy and such patients have a three to five fold higher risk of thromboembolism [1]. The added risk factors were age more than 40 years, BMI> 25 and failure to initiate early ambulation due to hemodynamic instability. Postoperative hemodynamic instability is a common reason

for limiting mobilisation of patients and this issue is of particular concern after major oncosurgical procedures [3]. Our patient was started on thromboprophylaxis from postoperative day 1 but still developed venous thromboembolism reflecting the significance of ruling out DVT and PE in such high-risk patients when we encounter refractory cardiac arrhythmias. The dynamic equilibrium between prothrombotic and antithrombotic factors will decide whether DVT/PE will occur or not. In this patient, the prothrombotic factors were stronger than the antithrombotic measures. Anticoagulation resulted in rapid resolution of respiratory symptoms and rhythm reverted to sinus within a few hours of treatment initiation.

There needs to be a high index of suspicion in cancer patients when they present with cardiac arrhythmias. There are several reports of atrial arrhythmias associated with pulmonary embolism and the underlying cause is possibly due to elevated right heart pressures as a result of PE leading to myocardial ischemia, or due to atrial stretch that instigates atrial arrhythmias [4]. There is also a strong association of pulmonary embolism presenting as atrial arrhythmias with increased morbidity and mortality [5]. Mortality among the treated patients is around 22% and in untreated patients it is as high as 80% [6]. This reiterates the importance of thromboprophylaxis in all cancer patients and the need to have low threshold to rule out thromboembolism when encountered with atypical symptoms of pulmonary embolism.

Conclusion

Though the occurrence of atrial arrhythmias is rare with PE, we need to get the D- dimer values tested after eliminating other common reasons for arrhythmia in oncosurgical cases like myocardial ischemia, mediastinitis and electrolyte imbalances. We cannot be complacent and ignore the risk of PE in a patient who has received thromboprophylaxis. Early initiation of anticoagulation is crucial to decrease pulmonary hypertension and right ventricular dysfunction that are seen in even asymptomatic cases of acute PE.

Declarations

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