Acute Pulmonary Embolism after Cesarean Section

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ABSTRACT

Pregnancy is a well-known state of hypercoagubality, increasing the risk of venous thromboembolism (VTE). It is more common with cesarean delivery than vaginal delivery. Pulmonary Embolism (PE) is under diagnosed during pregnancy and postpartum period as majority of signs and symptoms of PE are non-specific. We describe a case of 35-year-old obese female who suffered a syncopal attack following caesarean delivery and was diagnosed to have pulmonary embolism. A high index of suspicion is required for the timely diagnosis and treatment of PE as most of the signs and symptoms of PE are nonspecific. It is important to consider VTE prophylaxis especially in patients with risk factors.

Keywords: Pregnancy; pulmonary embolism; syncope.

INTRODUCTION

The risk of VTE is high during pregnancy because of the increased hypercoaguable state of pregnancy. It is five times more common in pregnant women when compared with women of similar age.[1]In addition; the incidence of VTE is much higher with cesarean section (CS) compared to vaginal deliveries. It accounts for significant morbidity as well as mortality in peripartum period. The number cesarean delivery in Nepal has increased significantly over the recent years that may expose higher number of women at risk of VTE. We describe a case of pulmonary embolism (PE) in a 35-year-old obese multigravida following cesarean delivery in TUTH.

CASE REPORT

A 35-year-old gravida$_4$ para $_{2+1}$ was admitted for induction of labourwith misoprostol at 40 weeks and two days of pregnancyDespite two doses of misoprostol, her bishop's score remained less than 6 and she eventually underwent emergency CS for moderate meuconium stained liquor under spinal anesthesia without any complications.

'On the 1st post-operative day, she suffered a syncopal attack in the bathroom. Systolic blood pressure (BP) was 80 mm of Hg and diastolic BP was unrecordable. Her pulse rate was 120 and SpO2 was 83% in room air. BP improved to 90/60 mm of Hg after intravascular fluid administration. She had recurrence of syncope after two hours. There was nohistory of chest pain, dyspnea and palpitations. Cardiovascular examination showed tachycardia with regular rhythm, normal heart sounds withoutadded sounds. Respiratory examination was unremarkable. Abdomen and vaginal examination findings were normal for her post operativestatus.She did not have calf tenderness or lower extremity edema. Hematological investigation showed normal hemoglobin, white blood cell and platelet counts but potassium level was low (2.5meq/l) requiring supplementation. Renal function was normal with blood urea nitrogen of 5.5mmol/l and creatinine of 0.5 mg/dl. Her D-dimer was 5200ng/ml. ECG showed sinus tachycardia with S1Q3T3 pattern. CXR was normal. With the provisional diagnosis of pulmonary embolism (PE) she was started on subcutaneous enoxaparin 1 mg /kg twice a day.

She was planned for Transthoracic echocardiogram which showed moderate tricuspid regurgitation with dilated right ventricle. Right ventricle systolic function was moderately decreased with normal left ventricular systolic function. She underwent computed tomography (CT) pulmonary angiography, which confirmed bilateral pulmonary artery embolism with minimal right pleural effusion and thrombus in suprarenal segment of inferior venecava. She made steady recovery and she was subsequently transitioned to warfarin with goal

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international normalized ratio (INR) of 2-3. She was discharged from the hospital on day 16.

DISCUSSION

VTE is the leading cause of maternal deaths during prergnancy and post parturm period. In the developed countries, it accounts for 1.2-4.7 deaths per 100,000 pregnancies.[2] In the developing countries, the incidence of VTE has been on a rise with 1 in 16 per year.[3]

The risk factors for VTE during pregnancy and postpartum period include obesity, obstetrical bleeding and comorbidities such as varicose vein, cardiac diseases. increased maternal age (greater than or equal to 35), eclampsia/preeclampsia, preterm delivery (< 36 weeks). In addition, the incidence of VTE is much higher with cesarean delivery compared to vaginal deliveries as it involves pelvic manipulation.The risk factors in our case were increased maternal age and obesity, and cesarean deliverybesides being in the postpartum period.

Patients with pulmonary embolism present with dyspnea, usually of acute onset, at rest or with exertion (73%), pleuritic chest pain (44%), calf or thigh pain (44%), calf or thigh swelling (41%), and cough (34%). Common clinical signs include tachypnea (54%), tachycardia (24%). Syncope is a rare presentation of pulmonary embolism[4] and it can be due a) greater than 50% occlusion of the pulmonary vascular tree which causes right ventricular failure and impaired left ventricular filling, leading to a significant reduction in cardiac output, b) arrhythmias associated with right ventricular overload and c) vasovagal reflex that leads to neurogenic syncope. Hypoxemia secondary to ventilation or perfusion abnormalities may play an important role in the development of syncope. The most likely etiology for syncope in our case may be due to the embolism involving the both right and left pulmonary artery and their branches.

The diagnosis of PE can often be missed as clinical signs and symptoms are nonspecific.Hence high index of suspicion is required to make the timely diagnosis and treatment. Supportive investigations like arterial blood gas analysis, electrocardiogram, echocardiography, d-dimer test (>500ng/ml) can be done. A study in Turkey showed that spiral CT pulmonary angiography (CT-PA) diagnoses and enables accurate assessment of PE severity in a single examination[5] and is the most commonly used diagnostic modality. In our case PE was diagnosed by CT-PA. Ventilation-perfusion (V/Q) scan can be used in patients with no known pulmonary disease and normal chest radiograph.Though pulmonary angiography is the gold standard for diagnosing PE, it is rarely required due to recent advances in CT technology and high sensitivity and specificity of CT-PA. Compression Ultrasonography (CUS) can be used for detection of associated proximal lower extremity DVT.

Though anticoagulation is the mainstay of treatment, supportive treatment is vital in patients with PE. Aggressive resuscitation with crystalloid and vasopressor is necessary in patients with hemodynamic compromise while waiting for the pharmacological, surgical or interventional reperfusion treatment.[6] Parenteral anticoagulants such as unfractionated heparin (UFH), low molecular weight heparin (LMWH) and fondaparinaux can be used as immediate anticoagulants. LMWH or fondaparinaux are preferred over heparin as they carry a lower risk of inducing major bleeding and heparin induced thrombopenia (HIT)as shown in a Cochrane Study done in 2012.[7] Immediate therapeutic anticoagulation once PE is diagnosed has been shown to reduce the mortality rate[8] which was also done in our case. Oral anticoagulants should be initiated as soon as possible, and preferably on the same day as the parenteral anticoagulant and should be continued for at least 5 days until the international normalized ratio (INR) has been 2.0–3.0 for two consecutive days.[9] In our case, weused LMWH and warfarin for 5 days and then continued with warfarin . Newer anticoagulants such as dabigatran, rivaroxaban and apixaban can also be used in place of oral Vitamin K antagonist (VKA).

Venous filters can be used as temporary measure in patients with contraindication for anticoagulation. The most important measure for prevention of VTE is early ambulation which should be encouraged in all postpartum patients.[10]Use of pharmacologic and mechanical prophylaxis such as compression stockings and pneumatic compression devices should be routine especially in patients with high risk of VTE.

Our patient presented with syncope, which is one of the unusual presentation of PE. She did not receive prophylaxis for VTE despite having high risk factors such as advanced maternal age and obesity besides postpartum state, which led to significant morbidity and prolonged hospitalization. Therefore it is important to consider VTE prophylaxis especially in high-risk patients. Patients with PE may not present with the classical sign and symptoms. Though syncope is a rare presentation of

PE, it should be kept in mind in pregnant women with high risk factors for VTE.

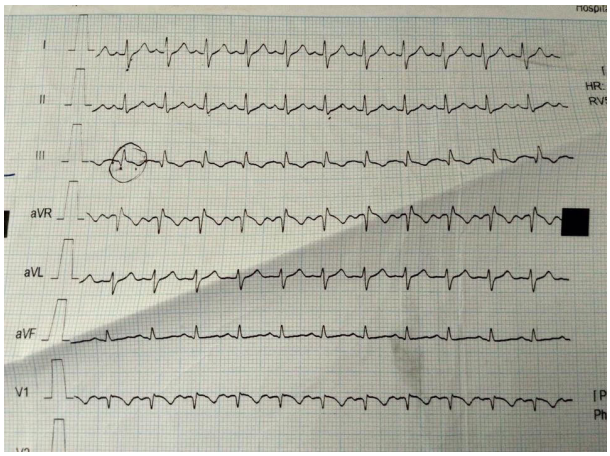

Fig 1. ECG showing $S_1Q_3T_3$ pattern.

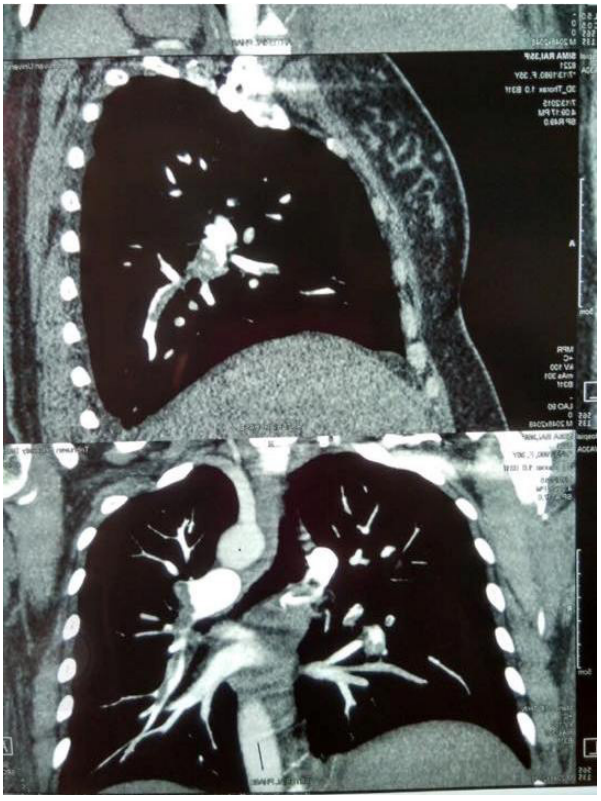

Fig 2. Non occular hypodense filling defect at the bifurcation of right pulmonary artery and extending into its ascending and descending branches.

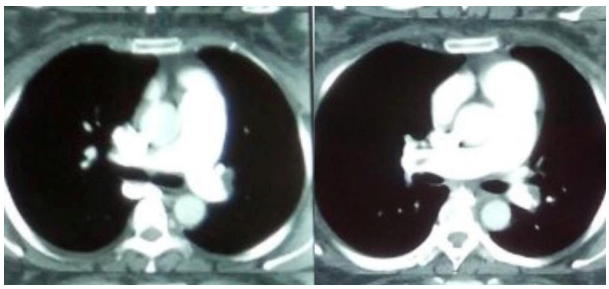

Fig 3. Non occular hypodense filling defect at bifurcation of left pulmonary artery and extending into its descending branch.

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