CASE REPORT

Massive Pulmonary Embolism In A Postpartum Case of Caesarean Section A Case Report

Javid Ahmad Wani[#], Irfan Ahmed[*], Showkat Ali Mufti[†]

[#]Junior Resident, [*]Senior Resident, [†]Professor and Head Department of Emergency Medicine, SKIMS

ABSTRACT

Introduction : The overall incidence of acute pulmonary embolism is 0.004% per year1; among post-partum women, the incidence of venous thromboembolism is approximately 3 to 7 every 10,000 deliveries, which is 15 to 35 times that of females of the same age who are not pregnant[2]. Venous thromboembolism contributes to 20% of pregnancy-related mortalities. The highest risk is in the puerperium[3]. Thrombolysis is standard of care in pulmonary thromboembolism with shock and right ventricular hypokinesia[4-7], however, immediate post-operative state compels conventional treatment. Patients do well with anticoagulation and proper supportive treatment as illustrated in this case.

Case report : We report a case of a 34-year old female who developed sudden onset breathlessness while walking on the 2nd post-operative day of an uneventful caesarean section. She was dyspneic, cyanosed and in hypotension. CXR was normal, ECG showed S1Q3T3 pattern, and d-dimer was raised. CTPA revealed features of pulmonary embolism. Thrombolysis was contemplated but was abandoned in view of recent surgery. She received anticoagulation with Heparin (and later warfarin) and supportive care including intravenous fluids, oxygen and Dopamine and Doubutamine. She improved and was discharged after 10 days on warfarin anticoagulation.

Conclusion : Breathlessness in a patient in the post-operative period or pregnancy
should lead to the possibility of pulmonary thromboembolism. PTE with hypotension or RV hypokinesia has a high mortality, merits thrombolysis plus anticoagulation. But patients with contraindication to thrombolysis should receive anticoagulation and standard supportive care. JMS 2016; 19(2):90-94.

Keywords- PTE (pulmonary thromboembolism), DVT (deep vein thrombosis), CTPA (computed tomography pulmonary angiography).

INTRODUCTION

The overall incidence of acute pulmonary embolism is 0.004% per year, and the reported incidence has increased with the use of spiral computed tomography (CT). The most common etiology of acute pulmonary embolism is deep vein thrombosis (DVT). Approximately 79% of pulmonary embolism patients have a history of DVT, and 50% of patients with DVT are diagnosed with pulmonary embolism. During pregnancy, the incidence of venous thromboembolism has been reported to be 5 to 12 per 10,000 pregnancies, which is 7 to 10 times the incidence found in females of the same age who are not pregnant[1]. The incidence of DVT in each of the three trimesters is similar. Among post-partum women, the incidence of venous thromboembolism is approximately 3 to 7 every 10,000 deliveries, which is 15 to 35 times that of females of the same age who are not pregnant[2]. Venous thromboembolism contributes to 20% of pregnancy-related mortalities. The highest risk is in the puerperium[3].

Correspondence
Dr. Showkat Ali Mufti,
Professor and Head, Department of
Emergency Medicine, SKIMS, Srinagar
E-Mail : showkatmufti@gmail.com

CASE REPORT

We report a case of a 34 year female who was brought to A & E SKIMS, Srinagar for complaints of sudden onset Breathlessness while walking. It was associated with sweating and was not relieved by rest. There was no history of chest pain, or trauma, nor was there any family or past history of Deep Vein Thrombosis or Pulmonary Thromboembolism. The patient was in post-partum state and had delivered a baby by caesarean section 2 days ago. On examination, patient was conscious and oriented. Her pulse was 124/minute, BP=80/60 mm Hg, Temperature=37.2 ° C, Respiratory Rate (RR)=30 breaths per minute, SpO2=74% while breathing room air. She was cyanosed. JVP was not raised. Chest examination was unremarkable. Audible S3 was present on CVS examination. Abdominal examination revealed healthy wound site. CNS examination was unremarkable.

Chest X-ray was normal. ECG showed sinus tachycardia, S1Q3T3 pattern, and T-wave inversion in anterior leads. CTPA was done which revealed features of Pulmonary embolism involving right main pulmonary artery and its

ascending and descending branches and dilated right atrium and right ventricle. Echocardiography showed dilated RA and RV with RV hypokinesia. D-dimer level were high (2906.9 ng/ml). Trop-T was positive. Doppler Ultrasound of lower limbs was normal. ANA, Anti- phospholipid antibodies were negative. Protein C, Protein S, Anti-Thrombin 3 levels were normal. Factor V Leiden mutation was absent. Rest of the baseline and other investigations were normal.

Diagnosis of Pulmonary Embolism with hypotension was made and patient was treated with intravenous fluids, supplemental oxygen, Dopamine and Doubutamine and

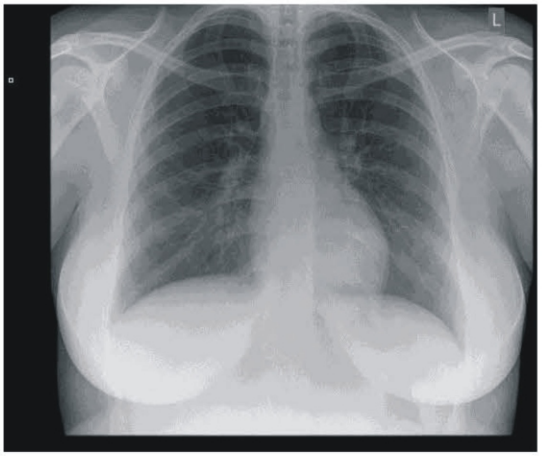
Hb (gm/dl)	TLC ($\times 10^3$/ml)	PLT ($\times 10^3$/ml)
10.1	12.9	273

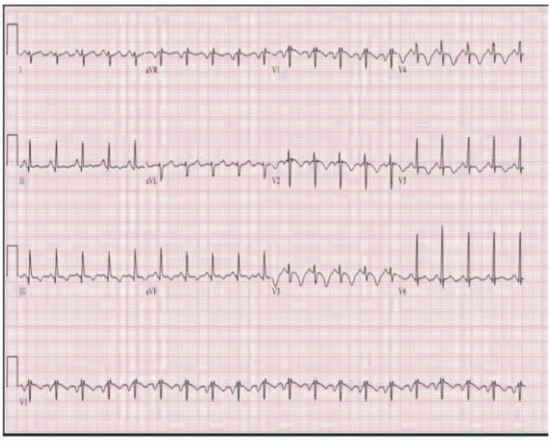
Coagulogram	
Aptt	INR
28/24	1.12
97/24	1.19
35/24	2.03

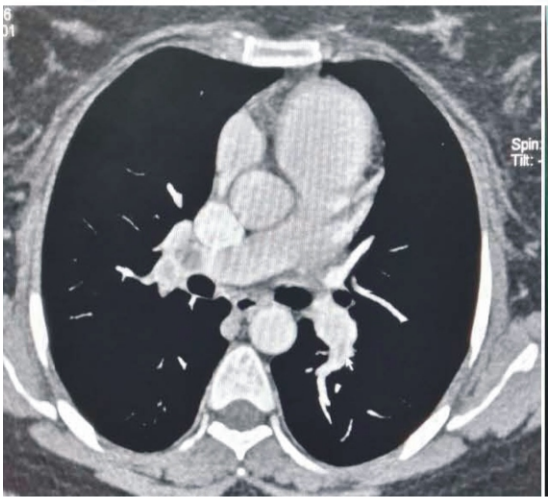
Urea	Creatinine	Ca	Na	K^+
35	0.87	9.2	139	4.1

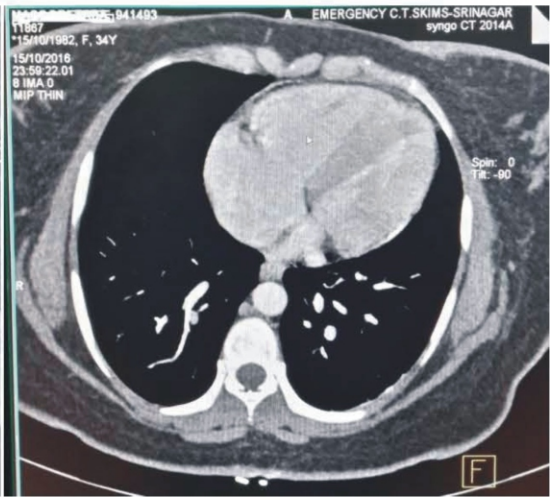
Bil	AST	ALT	ALP	Albumin
39	25	29	166	3.6

Blood culture	Urine culture
Sterile	Sterile









intravenous Heparin (5000U loading dose followed by 1000U/hour). Heparin was later switched to warfarin after a 2 day overlap. The patient was not thrombolysed in view of recent surgery. The patient's condition improved gradually and was weaned off Dopamine/Doubutamine and Oxygen. She was discharged after 10 days in a stable and symptom free condition on warfarin anticoagulation maintaining INR between 2 and 3. Follow up ECHO after one month of anticoagulation showed normal sized right heart chambers.

DISCUSSION

In pregnancy, there are changes in prothrombotic and anticoagulant factors that lead to increase in fibrin deposition and decrease in fibrinolysis, resulting in a procoagulant state. In the third trimester of pregnancy the flow velocity in the lower limb is reduced by approximately 50%,[8] and 50% of DVT in pregnancy are associated with inherited or acquired thrombophilia[9]. In approximately 50% of patients with a hereditary thrombophilia, the initial thrombotic event occurs in the presence of an additional risk factor such as pregnancy, oral contraceptive use, orthopedic trauma, immobilization, or surgery[10].

Clinical impression tends to be nonspecific for acute PE because many of the symptoms and signs of acute PE are common among patients without PE which include dyspnea, chest pain, cough, hemoptysis, tachpnea, tachycardia, rales, s4 gallop, shock[11].

For diagnosis of PTE numerous algorithms using various combinations of diagnostic tests have been devised; the most commonly used include clinical assessment, D-dimer and CTPA. In patients with high pre-test probability or D-dimer >500 ng/ml, CTPA is done. Pre-test probability is calculated using well's criteria as high or low. Advantages with CTPA include its accuracy with >90% sensitivity and >96% specificity, rapidity and its ability to find the alternate cause of patients symptoms[12-19]. Other ancillary tests that aid in the diagnosis of pulmonary embolism include Arterial Blood Gas (ABG) analysis[21], Brain Natriuretic Peptide (BNP)[18,19] and Troponin[24-28] levels. ECG may reveal sinus tachycardia, S1Q3T3 pattern, right ventricular strain, new incomplete Right Bundle Branch Block (RBBB)[29]; Chest X-ray (CXR) may show pleural effusion, atlectasis[30,31].

Regarding the patient in our case, pre-test probability of pulmonary thromboembolism was high and D-dimer was also raised, so CTPA was done which confirmed pulmonary embolism. The patient had hypotension and Echocardiography (ECHO) documented right atrium (RA) and right ventricle (RV) with RV hypokinesia. Patient was not thrombolysed in view of recent caesarean section. In the postpartum period, we found only four reported cases of PE in which thrombolysis was used. Bleeding complications were described in all four of these cases[32-35]. The patient in our case received anticoagulation (Heparin/warfarin) plus supportive care including intravenous fluids, oxygen and pressor support. Patient improved and was discharged in a stable and symptom-free condition. She was advised to continue anticoagulation. Follow up ECHO after one month of anticoagulation showed normal sized right heart chambers.

CONCLUSION

Breathlessness in a patient in the post-operative period or pregnancy should lead to the possibility of pulmonary thromboembolism. PTE with hypotension or RV dyskinesia has a high mortality, merits thrombolysis plus anticoagulation. But patients with contraindication to thrombolysis should receive anticoagulation and standard supportive care.

REFERENCES

1. Ray JG, Chan WS. Deep vein thrombosis during pregnancy and the puerperium: ameta-analysis of the period of risk and the leg of presentation. Obstet Gynecol Surv 1999; 54:265-71.
2. Heit JA, Kobbervig CE, James AH, Petterson TM, Bailey KR, Melton LJ 3rd. Trends in the incidence of venous thromboembolism during pregnancy or postpartum: a 30-year population-based study. Ann Intern Med 2005; 143:697-706.
3. American College of Chest Physicians. Antithrombotic therapy and prevention of thrombosis. 9th ed. American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012; 141(2 Suppl):7S47S
4. Kearon C, Kahn SR, Agnelli G, Goldhaber S, Raskob GE, Comerota AJ. Antithrombotic therapy for venous thromboembolic disease: American College of Chest Physicians Evidence-Based Clinical Practice

Guidelines (8th Edition). Chest 2008; 133(6 Suppl):454S-545S.

5. The urokinase pulmonary embolism trial. A national cooperative study. Circulation 1973; 47(2 Suppl):II1-108.
6. Goldhaber SZ. Thrombolysis in pulmonary embolism: a large-scale clinical trial is overdue. Circulation 2001; 104:2876.
7. Thrombolytic therapy in thrombosis: a National Institutes of Health consensus development conference. Ann Intern Med 1980; 93:141.
8. Macklon NS, Greer IA, Bowman AW. An ultrasound study of gestational and postural changes in the deep venous system of the leg in pregnancy. Br J Obstet Gynaecol 1997; 104:191-7.
9. Dessole S, Capobianco G, Arru A, Demurtas P, Ambrosini G. Postpartum ovarian vein thrombosis: An unpredictable event: Two case reports and review of the literature. Arch Gynecol Obstet 2003; 267:242-6.
10. Marik PE, Plante LA. Venous thromboembolic disease and pregnancy. N Engl J Med 2008; 359:2025-33.
11. Lucassen W, Geersing GJ, Erkens PM, Reitsma JB, Moons KG, Büller H, van Weert HC. Clinical Decision Rules for Excluding Pulmonary Embolism: A Meta-analysis. Ann Intern Med 2011;155:448.
12. Wells PS, Ginsberg JS, Anderson DR, Kearon C, Gent M, Turpie AG, Bormanis J, Weitz J, Chamberlain M, Bowie D, Barnes D, Hirsh J. Use of a clinical model for safe management of patients with suspected pulmonary 2001; 135:98.
15. Schoepf UJ, Goldhaber SZ, Costello P. Spiral computed tomography for acute pulmonary embolism. Circulation 2004; 109:2160-7.
16. Trowbridge RL, Araoz PA, Gotway MB, Bailey RA, Auerbach AD. The effect of helical computed tomography on diagnostic and treatment strategies in patients with suspected pulmonary embolism. Am J Med 2004; 116:84.
17. Kim KI, Müller NL, Mayo JR. Clinically suspected pulmonary embolism: 133(6 Suppl):454S-545S.
21. Rodger MA, Carrier M, Jones GN, Rasuli P, Raymond F, Djunaedi H, Wells PS. Diagnostic value of arterial blood gas measurement in suspected pulmonary embolism. Am J Respir Crit Care Med 2000; 162:2105-8.
22. Söhne M, Ten Wolde M, Boomsma F, Reitsma JB, Douketis JD, Büller HR. Brain natriuretic peptide in hemodynamically stable acute pulmonary embolism. J Thromb Haemost 2006; 4:552-6.
23. Kiely DG, Kennedy NS, Pirzada O, Batchelor SA, Struthers AD, Lipworth BJ. Elevated levels of natriuretic peptides in patients with pulmonary thromboembolism. Respir Med 2005;99:1286.
24. Meyer T, Binder L, Hruska N, Luthe H, Buchwald AB. Cardiac troponin I elevation in acute pulmonary embolism is associated with right ventricular dysfunction. J Am Coll Cardiol 2000; 36:1632.
25. Giannitsis E, Müller-Bardorff M, Kurowski V, Weidtmann B, Wiegand U, Kampmann M, Katus HA. Independent prognostic value of cardiac troponin T in patients with confirmed pulmonary embolism. Circulation 2000; 102:211-7.
26. Pruszczyk P, Bochowicz A, Torbicki A, Szulc M, Kurzyna M, Fijałkowska A, Kuch-Wocial A. Cardiac troponin T monitoring identifies high-risk group of normotensive patients with acute pulmonary embolism. Chest 2003; 123:1947-52.
27. Konstantinides S, Geibel A, Olschewski M, Kasper W, Hruska N, Jäckle S, Binder L. Importance of cardiac troponins I and T in risk stratification of patients with acute pulmonary embolism. Circulation 2002; 106:1263-8.
28. Douketis JD, Crowther MA, Stanton EB, Ginsberg JS. Elevated cardiac troponin levels in patients with submassive pulmonary embolism. Arch Intern Med 2002; 162:79.
29. Panos RJ, Barish RA, Whye DW Jr, Groleau G. The electrocardiographic manifestations of pulmonary embolism. J Emerg Med 1988; 6:301.
30. Stein PD, Terrin ML, Hales CA, et al. Clinical,

laboratory, roentgenographic, and electro-cardiographic findings in patients with acute pulmonary embolism and no pre-existing cardiac or pulmonary disease. Chest 1991; 100:598.

31. Stein PD, Saltzman HA, Weg JG. Clinical characteristics of patients with acute pulmonary embolism. Am J Cardiol 1991; 68: 1723.
32. Azarisman SM, Liza RA, Radhiana H, Sujana SS, Maskon O, Rosli MA, Fauzi AR. Immediate postpartum cardiorespiratory collapse: a management quandary. Blood Coagul Fibrinolysis 2010; 21(6):6014.
33. Wenk M, Popping DM, Hillyard S, Albers H, Mollmann M. Intraoperative thrombolysis in a patient with cardiopulmonary arrest and undergoing caesarean delivery. Anesth Intensive Care 2011;39: 671 4.
34. O'Keeffe SA, McGrath A, Ryan JM, Byrne B. Management of a massive pulmonary embolism in a pregnant patient with mechanical fragmentation followed by delayed catheter-directed thrombolysis in the early postpartum period. J Matern Fetal Neonatal Med 2008; 21(8):591 4.
35. Stefanovic BS, Vasiljevic Z, Mitrovic P, Karadzic A, Ostojic M. Thrombolytic therapy for massive pulmonary embolism 12 hours after cesarean delivery despite contraindication? Am J Emerg Med 2006; 24(4):5024.