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Acute pulmonary thromboembolism: Anaesthesia Challenges for emergency LSCS: A case report

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Abstract

Pregnancy is a hypercoagulable state and venous thromboembolism is 10 times more common in pregnancy and is a leading cause of maternal mortality. Anaesthesia in pregnancy is itself challenging. Pulmonary thromboembolism and its management further adds to that challenge. Plan of anaesthesia has to be decided weighing the risk benefit ratio. We hereby report the successful administration of subarachnoid block in non-obese primigravida with diagnosed acute PTE while taking the ASRA guidelines into consideration.

Keywords: Pregnancy, Pulmonary Thromboembolism, Anaesthesia, Emergency Lower section caesarean section

Introduction

Pulmonary embolism (PE) occurs when there is a disruption to the flow of blood in the pulmonary artery or its branches by a thrombus that originated somewhere else. While the pulmonary artery area is obstructed more than 50% it is known as pulmonary embolism. Virchow's triad of hypercoagulability, venous stasis, and endothelial injury provides an understanding of the risk factors of PTE. In fact, all three components of "Virchow's triad" occur in the course of pregnancy and delivery. There is increased venous stasis in the pelvic and lower limb veins due to the vasodilatory effects of pregnancy hormones and physical obstruction from the gravid uterus. Pregnancy increases levels of coagulation factors in preparation for the haemostatic challenge of delivery, and finally delivery, whether it is vaginal, instrumental or by caesarean section, causes a degree of injury to pelvic vessels. Planning for delivery involves a careful discussion with both the woman and the multidisciplinary team. First line investigations like ECG, chest X-ray and blood-gas analysis are advised to rule out any probability of PE and should be always correlated with general condition of the patient. CTPA is now considered the gold standard for diagnosis of pulmonary embolism. CTPA not only assesses the size and obstruction caused by the clot but also helps in early diagnosis of patients with enlarged right ventricular who are more prone to risk of early death. Patient has to be started on anti-coagulants as a part of treatment and to prevent any further deterioration. The anaesthetic management should aim at: (i) careful titration of anaesthetic agents to maintain myocardial function; (ii) maintaining normovolaemia; (iii) avoiding overdose of drugs during induction as the circulation time is slow; (iv) avoiding increase in ventricular afterload and (v) avoiding sudden hypotension where regional anaesthesia is the choice (vi) avoid tachycardia (vii) judicious fluid therapy (viii) avoid increase in peripheral vascular resistance by avoiding hypoxia, hypercarbia, hypothermia, acidosis and nitrous oxide. The purpose of this case report is to share our experience of successful peri-operative anaesthetic management of a case of diagnosed acute pulmonary embolism in a non-obese primigravida posted for emergency Caesarean section.

Case Report

A 30yr old, 38.5 weaker, nonobese primigravida with gestational diabetes came to emergency with active hemoptysis. On examination her Pulse was 108/ min, BP was 128/78 mm hg, and she was having dyspnea on exertion grade III with SPO₂ of 95% on Room air, RR- 26 / min, and left sided wheeze on auscultation. Initial treatment was given with Oxygen @ 2L/min via nasal prongs, tranexamic acid, ethamsylate and hemocheck. Meanwhile her investigation were also sent.

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Her CXR was normal, she had sinus tachycardia with no S1Q3T3 on ECG, dimer was high: 1.7 mg/l so emergency CTPA was done that showed Pulmonary thromboembolism in pulmonary artery branches supplying left lower segments of lung and wedge shaped infarct in left lower zones with pulmonary artery dilatation suggesting PAH but 2D Echo ruled out PAH or Right ventricle dysfunction, Lower limb Doppler ruled out DVT & patient was negative for COVID infection. So, patient was immediately started on UFH 5000 IU QID. After 2 days, patient had Premature rupture of membranes, so was posted for Emergency Caesarean section. Over 2 days period patient's symptoms improved with Pulse of 88/min, BP of 124/82 mm hg, Spo2 was 97% on RA, RR -20/ min but persistent wheeze on left lung. The NBM status of the patient was confirmed. Informed written consent was obtained from patient and relatives. The patient was taken inside the operating theatre. A patent intravenous angiocath was in situ, one more wide bore angiocath secured. ASA standard noninvasive monitor was set up which displays ECG, heart rate, non-invasive blood pressure, oxygen saturation, and program. Decision to give Subarachnoid block was taken weighing the risk benefit ratio. Patient given sitting position, parts scrubbed, painted and draped then following ASRA guidelines, SAB was given with 1.8 cc heavy Bupivacaine 6 hrs. after last dose of heparin after confirming normal APTT report. The level was set at T6 level. Patient was given fluid judiciously during surgery. Patient tolerated the procedure well, and was vitally stable throughout the surgery. She was monitored for neurological deficit in the postoperative period. PTE treatment with LMWH was started immediately after confirming hemostasis. Early mobilization was started to prevent further VTE. Patient was discharged on post op day 7 on oral warfarin.

Discussion

Pulmonary Thromboembolism related morbidity & mortality is high in caesarean section with risk of repeated PTE & pulmonary hypertension thus patient was started on anticoagulant immediately. Subarachnoid block was preferred over General Anaesthesia as our patient was hemodynamically stable and had pulmonary infarct with wheeze, to avoid the risk of pulmonary hypertension. We followed ASRA guidelines to decide when to stop anti-coagulants, to avoid neurological complications. Post-surgery the anticoagulants were resumed at earliest to prevent any further PTE events and other associated complications.

Conclusion

We report successful use of subarachnoid block in non-obese primigravida with diagnosed PTE without Right ventricular failure taking ASRA guidelines into consideration. A multidisciplinary team approach is essential for optimising the pre-operative medical conditions and developing a perioperative care plan.

Conflict of Interest

Not available

Financial Support

Not available

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