Case Report

An anesthetic management during Cesarean section with cardiac disorder (peripartum cardiomyopathy) with severe pre-eclampsia with previous LSCS

Chunni Lal[1], Pramila Soni[2]

From [1]PG Student/Resident Doctor, [2]Associate Professor, Department of Anaesthesia, Dr. S. N. Medical College, Jodhpur, Rajasthan, India

ABSTRACT

Anesthetic management of cardiac disorders in pregnancy has always been complicated and challenging. Peripartum cardiomyopathy (PPCM) is a rare but extremely fatal, life-threatening disease affecting the parturient with mortality rates as high as 35–50%. Developing in late pregnancy or immediately after delivery endangers not only the mother but also the baby. We report here a case of a 27-year-old female parturient presenting at 38 weeks of gestation for cesarean delivery with labor pain with recently diagnosed PPCM (moderate mitral regurgitation, mild tricuspid regurgitation, and 2D ejection fraction of 55–60%) complicated by severe pre-eclampsia with previous lower segment cesarean section. She developed cardiac failure just before the induction of anesthesia. She was successfully resuscitated, operated under general anesthesia, and shifted to the critical care unit for further management.

Key words: Anesthesia, Heart failure, Peripartum cardiomyopathy, Pre-eclampsia

A rare idiopathic disease having an incidence of 1 in 4000 in the obstetric population, presenting with signs and symptoms of heart failure, with significant morbidity and mortality (35–50%) goes by the moniker of "peripartum cardiomyopathy" (PPCM) [1-4].

While there has been a multitude of case reports enunciating anesthetic challenges in this population [5-7], we present a case that was distinct for the concomitant presence of pre-eclampsia (PE) and florid heart failure on the operating room table.

CASE PRESENTATION

A 27-year-old female (G2P1) was admitted to the labor room at 38 weeks of pregnancy with associated breathlessness for safe confinement. The past pregnancy was uneventful and the present pregnancy was uneventful till 7 days before admission when she had an episode of respiratory distress along with high blood pressure requiring medical attention.

On admission, her electrocardiogram showed sinus tachycardia (Fig. 1) and an echocardiogram demonstrated moderate mitral regurgitation, mild tricuspid regurgitation, and 2D ejection fraction (EF) of 55–60%.

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A diagnosis of PPCM was made and her clinical condition improved after she was started on digoxin, frusemide, and labetalol along with oxygen supplementation. She was planned for an elective cesarean section as she had a history of a previous cesarean section along with severe PE (proteinuria 720 mg/dL) and breech presentation in a setting of PPCM.

Upon arrival in the operation room, the patient had a baseline heart rate of 114 beats/min (regular) with a blood pressure of 178/108 mmHg, bilateral crackles in both lungs, and a baseline SpO_2 of 99% (on air) in supine position with a wedge under the right hip (to avoid caval compression). However, just before induction of anesthesia, the patient became agitated, and dyspneic, had decreased oxygen saturation despite oxygen supplementation, and a progressive increase in crackles in bilateral lung fields. This acute deterioration mandated an emergency tracheal intubation with intravenous (IV) etomidate 15 mg and succinylcholine 100 mg. A presumptive diagnosis of congestive cardiac failure was made and treatment in the form of IV morphine, furosemide (10 mg aliquots for a total of 40 mg), and a decision to proceed with cesarean section was made in consultation with the attending cardiologist and obstetrician. Intraoperative drug pharmacology consisted of morphine, isoflurane (0.6–0.8% in 100% oxygen), and atracurium (for neuromuscular blockade), as well as, a slow infusion of oxytocin (10 units in 200 mL of normal saline) after

Correspondence to: Dr. Chunni Lal, JR-3, MDM Hospital Family PG Hostel No.7, Dr. S. N. Medical College, Jodhpur, Rajasthan, India. E-mail: drclchoudhary@gmail.com

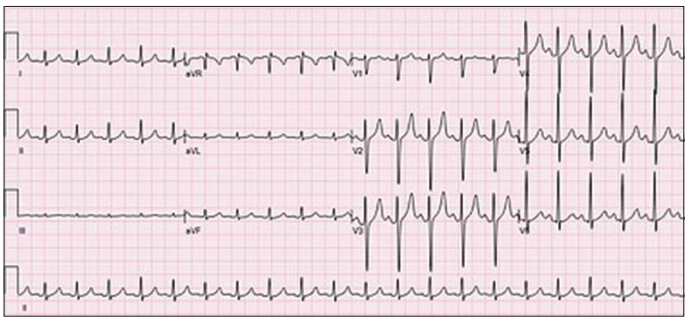

Figure 1: Electrocardiogram of the patient shows sinus tachycardia

the baby's delivery. The patient was ventilated with pressure-controlled ventilation.

A healthy male baby (weight 2.5 kg) was delivered and was transferred to the neonatal care unit. The duration of surgery was 30 min and the hemodynamic parameters during and just after the procedure were acceptable. Her intraoperative urine output was 200 mL, her estimated blood loss was 600 mL, and she had received 300 mL of IV fluid (lactated Ringer's solution) with no requirement of ionotropic support. The patient was shifted to the critical care unit for elective ventilation, and she was subsequently extubated with stable parameters. The rest of the hospital stay was uneventful for the patient as well as the baby and both were discharged home in a stable condition.

DISCUSSION

PPCM is characterized as left ventricular EF (LVEF) ≤45% with or without LV cavity dilation occurring during the peripartum period. The history of previous heart disease and other heart failure causes goes against the diagnosis of PPCM [1,2].

Among the plethora of symptoms that PPCM patients commonly present with, our patient had features such as dyspnea, orthopnea, systolic murmur, and pedal edema suggesting heart failure complicated by uncontrolled hypertension, whereas proteinuria was a reflection of concomitant severe PE [8].

Similar to our patient, there is a significant rate of prevalence of PE in PPCM patients (more than 4 times the general population), which is attributed to common pathophysiological processes such as involvement of the vascular system and left ventricular dysfunction [9]. Patients with PPCM without PE have a better outcome than patients of PPCM with concomitant PE [10].

General anesthesia resulted in a better outcome in cases with borderline or low-systolic function (LVEF <30%) as compared to those with relatively better systolic function (LVEF 30–45%) where graded neuraxial blocks have been safely used [11]. We had also planned for a graded neuraxial block because of adequate cardiac reserve in the setting of severe PE. However, the episode of congestive cardiac failure on the operation room table with imminent danger to the viability of the baby and risk to maternal life necessitated urgent intubation to ameliorate the hypoxia of a severely compromised mother. The favorable hemodynamic profile of etomidate, restricted fluid therapy, and slow infusion of oxytocin along with elective ventilation proved to be effective in maintaining cardiac stability during the perioperative period.

Thus, despite PPCM with PE being classically associated with poorer prognosis and our patient was having an episode of heart failure on the operation room table, a prompt and scientific multidisciplinary approach in our case helped us to beat the odds and we had a favorable obstetric outcome.

Primary care physicians have significant exposure to pregnant parturients and our case report highlights the need for a strong index of suspicion to rule out innocuous heart failure which surprisingly mimics the physiological changes of pregnancy.

CONCLUSION

PPCM is a rare but significant entity complicating the terminal stages of pregnancy. While planning anesthesia for LSCS in these patients, important factors to be considered include the urgency of surgery as well as the prevalent associated complications. In very rare circumstances, heart failure might be precipitated on the operation room table during the perioperative course. A multidisciplinary approach with the goal to avert radical swings in hemodynamic parameters, and avoidance of myocardial depression, while taking into consideration other complications of pregnancy is essential for a better outcome.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient consent with the clear understanding that the images and clinical details of the patient can be reported in the journal making due efforts to conceal their identity although their anonymity cannot be guaranteed.

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