



ANAESTHETIC MANAGEMENT IN A CASE OF PERIPARTUM CARDIOMYOPATHY IN A TERTIARY CARE HOSPITAL – A CASE REPORT

Anaesthesiology

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ABSTRACT

Peripartum Cardiomyopathy (PPCM) presents significant challenges in anesthesia management, particularly when diagnosed postpartum. PPCM, a severe form of heart failure occurring late in pregnancy or shortly after delivery, necessitates careful anesthetic considerations to ensure patient safety and optimal outcomes.

KEYWORDS

Peripartum Cardiomyopathy (PPCM) , postpartum , anaesthesia care , hemodynamic stability

INTRODUCTION

Peripartum cardiomyopathy (PPCM) is a rare condition that affects women in late pregnancy and in the post-partum period. It is characterized by heart failure that occurs without any other identifiable cause.

Case Report :

A 27 year old multigravida at 23 weeks 6 days with mild oligohydramnios, breech and intrauterine fetal death arrived with complaint of shortness of breath. She gave a history of cough with expectoration since 3 weeks for which no medication was taken .She had never been on any medications before. She had no co-morbidities. On examination, the patient was afebrile, with a pulse rate of 130 beats/minute, and blood pressure of 136/96 mmHg. Auscultation revealed bilateral chest wheeze. Patient had 60% saturation on room air, and 80% saturation on 15 liter oxygen.

Management:

The patient underwent an emergency hysterotomy under general anesthesia. Injection ondansetron 4mg and injection glycopyrrolate 0.2mg IV was given as premedication. After adequate pre-oxygenation with 100% oxygen for 3 minutes, induction was performed with propofol 100 mg, and succinylcholine 75 mg. Airway was secured using an appropriately sized cuffed orotracheal tube

Anesthesia was maintained using atracurium on Bain's open circuit. The patient was then transferred intubated, to the obstetrics ICU. An immediate postoperative chest X-ray revealed pulmonary edema.

The patient was placed on IPPV mode with settings of TV - 360ml, FiO₂ - 100%, f - 16/min and PEEP - 10cm h₂O overnight and switched to SIMV mode in the morning. The FiO₂ was gradually reduced, and the patient was transitioned to CPAP mode on **postoperative day 1**. However, the CPAP trial with FiO₂ at 40% and PEEP at 10cm h₂O was unsuccessful as the patient was unable to maintain adequate oxygen saturation, requiring a return to IPPV mode.

A 2D echocardiogram showed an LVEF of 15-20% and a non-collapsible IVC measuring 17 mm, along with minimal to mild pericardial effusion. Diagnosis of peripartum cardiomyopathy with heart failure and reduced ejection fraction was made. The patient was placed on fluid restriction, limited to 1-1.5 liters per day, and maintained on an equivocal or negative fluid balance. Enoxaparin injections were also initiated.

On post-operative day 4 another CPAP trial was attempted with FiO₂

at 40% and PEEP at 6cm h₂O, this trial was again unsuccessful. During this period, the patient developed bilateral wheezing, periorbital edema, and left-sided pneumothorax. An intercostal drainage tube was inserted, and the patient was placed back on IPPV mode with a tidal volume of 450, FiO₂ at 100%, PEEP at 5, and a respiratory rate of 14. The patient was also started on antibiotics, dexamethasone injections, furosemide injections and spironolactone tablets.

On postoperative days 5 and 6, the patient was switched to SIMV mode which fio₂ was tapered from 100% to 60%, and the pneumothorax resolved. **On day 7** patient was switched to CPAP with fio₂ 50%. On day 8 fio₂ was further reduced to 40%. **On day 9** t piece was trial was given; patient was vitally stable and was extubated successfully.

DISCUSSION:

Peripartum Cardiomyopathy (PPCM) is associated with a poor prognosis and is a leading cause of maternal mortality, primarily due to severe heart failure, arrhythmias, and thromboembolism. Contributing risk factors include advanced maternal age, multiple pregnancies, and preeclampsia.

Anesthesia management for patients diagnosed with PPCM post-delivery requires careful consideration due to the potential for sudden and severe symptoms, particularly in those who were undiagnosed until the delivery.

Anesthesia Selection

- General Anesthesia is often preferred when significant hemodynamic instability is present or if rapid intervention is required.
- Regional Anesthesia (such as epidural or spinal) can be advantageous for patients with mild heart failure, as it avoids the systemic effects associated with general anesthesia, though it necessitates meticulous monitoring.

Hemodynamic Monitoring:

- Continuous monitoring of vital signs is crucial to promptly identify and manage any hemodynamic instability.

Anesthetic Agents:

- Use anesthetic agents that exert minimal effects on cardiac function and avoid those that could induce myocardial depression or hypotension.
- Ensure availability of vasopressors and inotropes to manage potential hemodynamic instability and support cardiac output.

Positioning During Cesarean Section

- Positioning should be optimized to enhance venous return and minimize cardiac strain. The left lateral decubitus position is recommended to improve venous return and mitigate the risk of pulmonary congestion.

Postpartum Considerations

- Vigilance is required to monitor for increased cardiac stress, fluid overload, hemorrhage, and other postpartum changes. Fluid management must be precise to prevent overload and edema.
- Evaluate cardiac function and monitor BNP levels to assess the progression or resolution of heart failure.

Additional Recommendations

- Employ multimodal analgesia to minimize opioid use, which can adversely affect cardiac function.
- Provide thorough education to the patient and family regarding potential risks, symptoms of worsening heart failure, and the importance of adherence to follow-up care and medication regimens

CONCLUSION:

Effective management of anesthesia in postpartum patients with Peripartum Cardiomyopathy (PPCM) requires a precise balance between providing adequate anesthesia and maintaining hemodynamic stability. Achieving this demands vigilant monitoring, judicious drug selection, and a multidisciplinary team approach to minimize risks and enhance patient outcomes.

Patients with PPCM are at risk of rapid deterioration. Anesthesia management must be meticulously planned and coordinated in such cases, focusing on individual needs and the urgency of the situation to ensure stability and reduce risks.

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