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Case Report

Maternal Resilience: A Case Report of Cesarean Section One Week after Acute Myocardial Infarction

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ABSTRACT

Maternal morbidity and morbidity are among the most important concerns of the World Health Organization and every country's healthcare system. Anesthetic management of parturients with a history of acute myocardial infarction (MI) presents unique challenges, particularly in the 3rd trimester when the pregnancy is approaching its end. Herein we will present anesthetic management of a parturient who underwent a cesarean section one week after acute myocardial infarction.

Introduction

Acute myocardial infarction (MI) is an uncommon yet critical condition that poses significant risks to both maternal and fetal health during pregnancy. Although rare, the global rate of maternal heart attack has been rising, with estimates ranging from 0.6 to 10.0 per 100,000 pregnancies [1-2]. It should be noticed that the etiology of Pregnancy-related myocardial infarction (PAMI) is different as spontaneous coronary artery disease (SCAD) is the leading cause of PAMI and the management is almost conservative [2]. SCAD is more common in women of reproductive age especially during pregnancy [3].

Additionally, the decision to proceed with vaginal delivery or cesarean section, in the context of recent MI requires careful consideration of the risks involved, as well as the need for timely delivery in cases where maternal or fetal well-being is at stake. The timing of surgical procedures following an acute MI is crucial. Current guidelines suggest a cautious approach, recommending that elective surgeries be delayed for a minimum of two weeks after PAMI [1]. However, in certain obstetric scenarios, such as an urgent cesarean section, the benefits of timely intervention may outweigh the risks.

This case report aims to highlight the complexities involved in managing a cesarean section one week after an acute MI, emphasizing the importance of interdisciplinary collaboration in optimizing patient outcomes. We will discuss the anesthetic considerations, postoperative care provided, as well as the surveillance of both the mother and newborn.

Case Report

The patient was given informed consent about the anonymous dissemination of her data. The patient was a 37-year-old parturient who presented with a chief complaint of typical chest pain and diaphoresis in the 38th week of gestations and was quickly transferred to Modarres Hospital for Primary Coronary Intervention.

This was the second pregnancy of the patient; she had a spontaneous abortion 8 years ago at the 16th week of gestation, and the current pregnancy was a result of intrauterine insemination (IUI) due to primary infertility. She also had hypothyroidism and was under regular treatment with 50 mcg of Levothyroxine daily. Additionally, she took 81 mg of aspirin until the 36th

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week of gestation and received 40 mg of subcutaneous enoxaparin afterward. Her past anesthetic history included general anesthesia for rhinoplasty and uterine septoplasty, as well as spinal anesthesia for dilation and curettage following abortion.

Coronary angiography (CAG) revealed that the patient suffered an inferior myocardial infarction secondary to spontaneous coronary dissection. The echocardiography one day after CAG showed an ejection fraction of 45 percent along with inferior wall hypokinesia, mild mitral regurgitation, and mild tricuspid regurgitation. Moreover, suspicious lines were seen in the ascending aorta. Fetal assessments, including fetal heart rate, cardiac echography, and Doppler sonography, were fortunately normal.

A week after the heart attack, the patient was brought to the operating room to terminate the pregnancy as the labor pain initiated. The patient underwent spinal anesthesia with 12 mg of hyperbaric Bupivacaine 0.5% under standard monitoring. Hydration was done judiciously according to hemodynamic status. There was no hemodynamic stability during surgery, the neonate had Apgar 9 and 10 in the 1st and 5th minute of birth, respectively. The total blood loss was estimated to be approximately 400 milliliters. The patient received for postoperative pain and was admitted to the intensive care unit for postoperative care and was finally discharged in good condition after one week.

Discussion

This case underscores the complexities and challenges associated with performing cesarean section in a case of PAMI. The decision to proceed with a cesarean section just one-week post-MI necessitated a thorough evaluation of both maternal and fetal risks. While guidelines generally recommend delaying elective surgeries for at least two weeks following an MI to mitigate the risk of perioperative complications, obstetric emergencies often require a more nuanced approach [1]. In this instance, the urgency of the cesarean section was driven by the initiation of labor pain which could worsen the cardiac condition by increasing sympathetic drive and cardiac work.

The most common primary causes of Mortality are peripartum hemorrhage, preeclampsia and related conditions, sepsis, complications associated with abortion and thromboembolic events [4]. However, cardiovascular diseases are the leading cause of maternal mortality in developed countries [5-6]. Acute myocardial complicates 1:16,000 pregnancies; which may be considered as uncommon yet fatal complications of pregnancy [5,7-8]. One of the most important measure which can improve maternal outcome in low to middle income countries is to provide hidh quality health care services, being aware of complications and timely providing appropriate services [9]. Our case was managed well because the patient was referred to tertiary teaching hospital in which academics were in charge of health care services; however, no national guideline regarding this issue exists.

Anesthetic considerations in this case were paramount, as the patient's cardiovascular stability was a significant concern. As american heart accociation recommended [8], a team involving anesthesiologists, obstetricians, cardiologists and even an intensivist were actively involved in management of the patient. The choice between general and regional anesthesia must be carefully weighed, particularly in patients with compromised cardiac function. Regional anesthesia, such as spinal or epidural anesthesia, can offer benefits by minimizing hemodynamic fluctuations; however, it also requires careful monitoring for signs of sympathetic blockade and potential hemodynamic instability [10-11]. In this case, spinal anesthesia was chosen while the patient had no contraindications and the heart status was also fair.

Postoperative care for patients who have undergone surgery shortly after an MI must include vigilant monitoring for cardiac complications. This includes assessing vital signs, managing pain effectively, and being alert to any signs of reinfarction or arrhythmias. The multidisciplinary approach taken in this case, involving cardiology, obstetrics, and anesthesia, facilitated comprehensive care that addressed both the maternal and neonatal needs. As the incidence of cardiac events during pregnancy continues to rise, further research is necessary to establish clear guidelines for managing such high-risk scenarios, ensuring that both maternal and fetal outcomes are optimized

Conclusion

There are several guidelines in Iran about management of high-risk pregnancies yet, increasing incidence of mothers presenting with cardiac morbidities necessitates development of national guidelines about these special population as well

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