Cesarean Delivery for an Achy Breaky Heart: Urgent cesarean section for a parturient with peripartum cardiomyopathy

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Introduction

Cardiovascular disease is the leading cause of death in pregnant women in the United States. Peripartum cardiomyopathy (PPCM) is a rare contributor to this cause of death with an 11% mortality at 8 years. Etiology is thought to be secondary to vascular dysfunction and genetic predisposition. PPCM can be complicated by ventricular tachycardia (VT), systolic heart failure, stroke, and death. While 70% of patients' LVEF will recover within 6 months post-partum, chronic systolic heart failure (CHF) with LVEF <35% can persist. Risk of PPCM is higher in women who have previously had PPCM, especially if their LVEF did not return to baseline. Recurrent PPCM carries an increased mortality of 16% in pregnancy, particularly during the time of delivery[1].

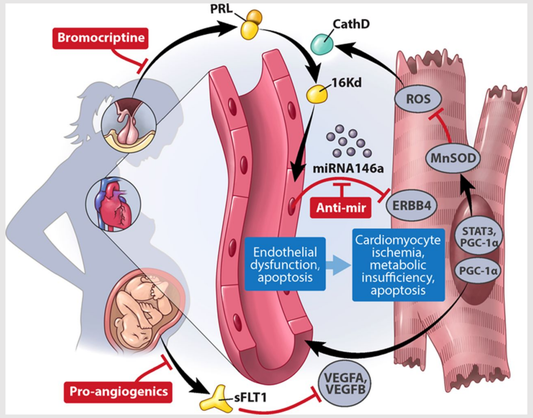

Fig.1 Vasculo-hormonal hypothesis of PPCM pathophysiology[1]

Case Presentation

A 32-year-old female G3P1101 at 28.2 weeks with CHF secondary to recurrent peripartum cardiomyopathy (previous LVEF 35%), ICD implantation due to multiple cardiac arrests after sustained VT, paroxysmal atrial fibrillation, mitral regurgitation (MR) status post Mitraclip, and a BMI of 55 presented with decompensated CHF and syncope. Cardiac assessment demonstrated LVEF of 25%, moderate MR, and multiple episodes of nonsustained VT. The decision was made with a multidisciplinary team to perform an urgent cesarean section with tubal ligation. An amiodarone infusion was started for VT, and the ECMO team was consulted.

The patient was brought to the cardiothoracic operating room. Defibrillation pads were placed, and a magnet was applied to her ICD. An epidural was placed with loss of resistance technique and titrated to a surgical level of analgesia with fentanyl, 2% lidocaine, epinephrine, and sodium bicarbonate. Left femoral central venous and right femoral arterial lines were placed for quick wire access if emergent ECMO was required. The procedure proceeded without complication. IV oxytocin and epidural morphine were administered after delivery of the neonate, and the patient maintained hemodynamic stability throughout. Post operative course was uncomplicated. Since surgery, the patient has had multiple CHF exacerbations and her LVEF remains at 25% with continued MR causing pulmonary hypertension. Her ICD was recently upgraded from single to a dual-chamber defibrillator, and structural cardiology plans to intervene on her mitral valve soon as part of her cardiac rehabilitation.

Discussion

While early delivery of neonates is not routinely advised in patients with PPCM, the risks and benefits of early delivery to both the mother and fetus should be considered. In this case, the risk of adverse cardiac outcomes including cardiogenic shock and death outweighed the risks of prematurity to the fetus. Patients with a history of PPCM should be counseled on the risks of subsequent pregnancies, particularly if their LVEF did not normalize. In patients with recurrent arrhythmias and decompensated CHF secondary to PPCM, multidisciplinary team preparation and anesthetic management can be lifesaving for both mother and fetus. All efforts should be made to maintain homeostasis in unstable cardiac patients by utilizing slow titration of epidurals, invasive arterial blood pressure monitoring, and defibrillation pads. Preparation for ECMO should be considered for parturients at high risk of cardiogenic shock and death during delivery.

Reference

1. *Peripartum cardiomyopathy | circulation*. (n.d.). Retrieved January 16, 2023, from https://www.ahajournals.org/doi/10.1161/circulationaha.115.020491