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Successful Management in a Case of Dilated Cardiomyopathy in Pregnancy

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ABSTRACT
Dilated cardiomyopathy (DCM) is a rare but high-risk condition encountered in pregnancy, associated with significant maternal morbidity and mortality. It is characterized by ventricular dilatation and impaired systolic function, often in the absence of coronary, valvular, or congenital heart disease. Pregnancy superimposed on pre-existing DCM poses unique challenges due to the hemodynamic burden of gestation and the potential for rapid cardiac decompensation.
We present the case of a 35-year-old gravida 2, para 1 woman with a known history of coronary artery disease and reduced left ventricular ejection fraction (EF 38%), who was successfully managed throughout pregnancy with a multidisciplinary approach. She underwent elective caesarean section at 35 weeks under combined spinal-epidural anesthesia, delivering a healthy male neonate. Although she experienced transient postoperative pulmonary edema and further decline in EF to 32%, she stabilized with medical management and was discharged on day 6.
This case highlights the importance of vigilant antenatal surveillance, early involvement of a multidisciplinary team, and timely intervention in achieving favorable maternal and neonatal outcomes in patients with dilated cardiomyopathy.
Keywords: *Dilated cardiomyopathy, Pregnancy, Left ventricular dysfunction, Multidisciplinary management, Caesarean section*

INTRODUCTION

Dilated cardiomyopathy (DCM) is a primary myocardial disorder characterized by ventricular chamber enlargement and systolic dysfunction, typically defined as a left ventricular ejection fraction (LVEF) of <45%. The prevalence of DCM in women of reproductive age is relatively low, but when pregnancy occurs in such patients, the physiological cardiovascular changes of gestation can significantly worsen the clinical course.

Pregnancy normally induces a 30–50% increase in plasma volume, a rise in cardiac output by up to 40%, and a reduction in systemic vascular resistance. In women with structurally abnormal hearts, these adaptations may precipitate acute heart failure, arrhythmias, or even maternal mortality. Reported maternal mortality rates in pregnant women with pre-existing cardiomyopathy range between 7–20%, and perinatal mortality rates are also substantially higher compared to the general obstetric population.

The management of DCM in pregnancy is complex and requires a multidisciplinary approach involving obstetricians, cardiologists, anesthesiologists, and neonatologists. Early diagnosis, meticulous follow-up, and individualized delivery planning are crucial for optimizing outcomes.

CASE REPORT

A 35-year-old gravida 2, aborta 1 woman at 35 weeks + 2 days of gestation, spontaneously conceived, was admitted for elective delivery.

Past Medical History:

- Known case of coronary artery disease, with percutaneous coronary intervention in 2014 for anterior wall myocardial infarction (ostial LAD occlusion).
- Bronchial asthma on inhaled Formetrol and Budesonide.
- Diagnosed with gestational diabetes mellitus at 24 weeks, controlled with Tab. Metformin 250 mg twice daily.

Antenatal Course:

- At 9 weeks, antenatal booking was done with baseline echocardiography showing EF of 38%.
- She was started on Tab. Ecosprin 75 mg daily and later Tab. Metoprolol 25 mg BD after cardiology review.
- Serial echocardiography at 28 weeks revealed EF 38% with no signs of heart failure.
- Corticosteroids were administered at 28 weeks anticipating possible preterm delivery.

- At 35 weeks, repeat echocardiography showed EF 36% with dilated LV and hypokinetic basal, mid-anteroseptal, inferoseptal, and apical segments.

Delivery:

In view of moderate LV dysfunction and anticipated hemodynamic instability during labor, a planned lower segment caesarean section was performed under combined spinal-epidural anesthesia.

- A male infant weighing 2.39 kg was delivered with Apgar scores of 8/10 and 9/10.
- Cord pH was 7.24 with lactate 3.21.
- Intraoperatively, left radial artery line secured; noradrenaline infusion commenced prophylactically and titrated as per blood pressure.
- IV Frusemide 10 mg administered intraoperatively to prevent fluid overload.

Postoperative Course:

- On POD 0, patient developed breathlessness and bilateral basal crepitations. Chest X-ray revealed pulmonary edema with ground-glass opacities.
- Managed with IV Lasix 10 mg TDS, strict input-output monitoring, and oxygen supplementation.
- Repeat echocardiography showed EF reduced to 32%. Cardiac markers: Troponin I = 0.06, BNP = 1730.
- Gradual clinical improvement observed; diuretics tapered.
- On POD 3, she resumed normal activities, initiated on Digoxin, Torsemide, Enalapril, Aldactone, and Carvedilol.
- Discharged on POD 6 in stable condition with advice for close follow-up.

DISCUSSION

DCM in pregnancy presents unique diagnostic and therapeutic challenges. While many women may remain asymptomatic in early pregnancy, the physiological stress of the third trimester can precipitate overt heart failure. In our patient, despite severely reduced EF, meticulous monitoring and proactive multidisciplinary intervention ensured favorable outcomes.

Maternal Risks:

- Heart failure and arrhythmias
- Thromboembolic complications due to stasis and low EF
- Sudden cardiac death
- Worsening of underlying myocardial function postpartum

Fetal Risks:

- Intrauterine growth restriction
- Preterm birth (iatrogenic or spontaneous)
- Neonatal morbidity due to maternal medication exposure

Delivery Considerations:

The mode of delivery in women with cardiomyopathy is individualized. While vaginal delivery with epidural analgesia is often preferred, caesarean delivery is recommended when there is significant cardiac dysfunction, obstetric indications, or when hemodynamic stability is a concern. In this case, caesarean was chosen due to moderate LV impairment.

Anesthetic Considerations:

Regional anesthesia with invasive monitoring is favored to avoid the myocardial depressant effects of general anesthesia. Fluid restriction, vasopressor support, and avoidance of sudden preload or afterload changes are essential.

Postpartum Management:

The postpartum period carries the highest risk for decompensation due to fluid shifts. Careful monitoring in ICU, judicious use of diuretics, and initiation of cardiac medications compatible with lactation are critical.

Review of Literature:

- Regitz-Zagrosek et al. (2018, ESC guidelines) recommend risk stratification using the modified WHO classification; women with EF <30% fall into the highest risk category.
- Elkayam (2011) reported maternal mortality rates up to 15% in cardiomyopathy with EF <35%.
- Pearson et al. (2000) emphasized the importance of individualized delivery planning.

Our case aligns with literature emphasizing that timely diagnosis, close monitoring, and a multidisciplinary approach are key to survival in such high-risk pregnancies.

CONCLUSION

Dilated cardiomyopathy complicating pregnancy remains a significant challenge due to high maternal and perinatal risks. However, with early recognition, vigilant monitoring, and coordinated multidisciplinary care, successful outcomes are achievable.

This case demonstrates that even in women with pre-existing coronary artery disease and impaired left ventricular function, favorable maternal and neonatal outcomes are possible through individualized care planning.

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