CASE REPORT

Peripartum Cardiomyopathy: The Camouflage of Symptoms in Pregnancy

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Abstract

Aim: This case report aims at increasing the awareness about peripartum cardiomyopathy (PPCM) in antenatal mothers and the need for a multidisciplinary approach, including a team of cardiologists, anesthesiologists, and neonatologists along with the obstetrician toward planning the management of this condition.

Background: The most common causes of cardiomyopathy in a woman of childbearing age are viral infection, drug-induced cardiomyopathy, and PPCM. Peripartum cardiomyopathy is a rare incidence with unclear etiology in obstetric practice. The usual presenting symptoms are features of congestive cardiac failure, but some uncommon presentations like unstable arrhythmias and arterial thromboembolism are also present. Increased recognition of PPCM as a disease entity and advanced perinatal care have resulted in improved prognosis with a mortality rate of 0.5–16.5%.

Case description: We present a case of PPCM in a 21-year-old Gravida 3, Para 2, with no live children at 36 weeks and 3 days of gestation with a past history of vaginal deliveries with early neonatal death following the first pregnancy and a stillbirth in her second pregnancy. She was referred to our hospital with chief complaints of breathlessness on exertion and swelling of the legs for a period of 3 days and abdominal pain on and off. She was diagnosed with a case of PPCM and was successfully managed in our tertiary care hospital with a team of obstetricians, cardiologists, neonatologists, and anesthetists.

Conclusion: Peripartum cardiomyopathy is a rare obstetric complication that often presents with normal pregnancy symptoms which are exaggerated. A screening echocardiogram, especially in the third trimester of pregnancy, when there is even a slight increase in symptoms suggestive of heart failure, is important for prompt diagnosis and management. Peripartum cardiomyopathy also needs high vigilance and follow-up visits with a cardiologist after delivery.

Clinical significance: Peripartum cardiomyopathy is reported to be associated with life-threatening complications like heart failure, cardiogenic shock, arrhythmia, and thromboembolism that can occur in PPCM.

Keywords: Cardiac disease in pregnancy, Cardiovascular disease, Case report, Echocardiography in pregnancy, Heart failure, Left ventricle ejection fraction, Peripartum cardiomyopathy, Third trimester.

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Background

Peripartum cardiomyopathy, a diagnosis of exclusion, is defined as idiopathic cardiomyopathy presenting with heart failure secondary to LV systolic dysfunction (LVEF<45%) toward the end of pregnancy or postpartum if no other cause of heart failure is identified according to the Heart Failure Association of the European Society of Cardiology. On echocardiography, PPCM is diagnosed when there is left ventricular dysfunction with ejection fraction less than or equal to 45%, fractional shortening <30%, or a left ventricular end-diastolic dimension <2.7 cm/meter square.[1–3]

Case Description

A 21-year-old gravida 3, para 2, with no live children at 36 weeks and 3 days of gestational age with a past obstetric history of neonatal death following a full-term vaginal delivery in the first pregnancy and vaginal delivery with a stillbirth in the second pregnancy, presented with complaints of breathlessness on exertion, swelling of both lower limbs upto knees for 3 days and abdominal pain on and off for 3 hours. She perceived fetal movements well. She had no complaints of leaking or bleeding per vaginum. She had no complaints of chest pain, palpitations, cough, retrosternal pain, or symptoms suggestive of imminent eclampsia. No history of fever, infection in peri-conception or antenatal period, and no family history of cardiac disorders. On examination, pulse rate was 76 bpm and regular in rhythm. Blood pressure was 110/70 mm Hg. Room air saturation was 96%. JVP was raised. Cardiovascular examination was normal. Abdomen examination showed a single live intrauterine fetus in longitudinal lie with cephalic presentation with three uterine contractions lasting for 15 seconds over a period of 10 minutes. The cervix was uneffaced, and the cervical os was closed on vaginal examination. Blood investigations revealed normal blood counts, liver, and renal function tests. ECG and echocardiogram (Fig. 1) showed mild left ventricular systolic

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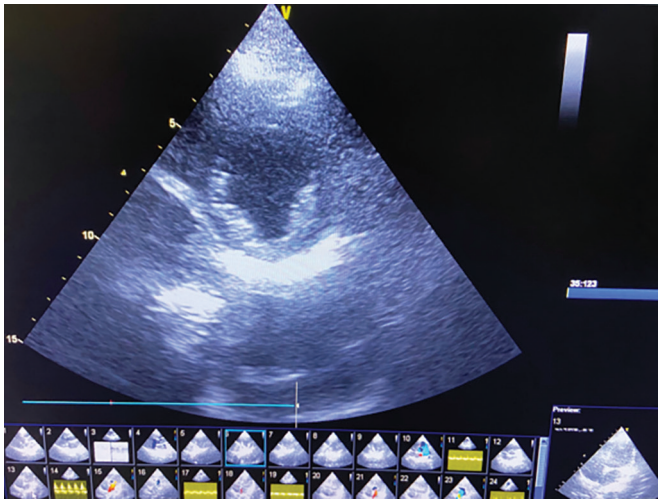

Fig. 1: Antenatal echocardiography showing global sluggishness and hypokinesia of the left ventricle

dysfunction and grade I left ventricular diastolic dysfunction with an ejection fraction of 45% along with global hypokinesia of the left ventricle.

A cardiologist was consulted. Serum BNP, Troponin T, and serum prolactin levels were within normal limits. After excluding other causes of heart failure, she was diagnosed with peripartum cardiomyopathy. Monitoring was done with Holter electrocardiography during the progression of labor. In view of nonreassuring NST suggestive of fetal distress, an emergency cesarean section under general anesthesia was planned after consulting with a cardiologist, anesthetist, and neonatologist. The intraoperative period was uneventful. Postoperatively, the patient was monitored in the intensive care unit. Propped-up position, fluid restriction, strict input–output monitoring, prophylactic diuresis with furosemide, thromboprophylaxis with enoxaparin, and other supportive measures were given. After careful hemodynamic evaluation by the cardiologist, beta blocker was avoided for our case due to relative bradycardia observed postoperatively. There was no evidence of signs and symptoms of heart failure. Her vitals were stable, and 24 hours of Holter electrocardiography monitoring was normal. The patient was symptomatically better. A repeat echocardiogram on postoperative day 10 showed an improvement in the ejection fraction to 50%, along with persistence of mild global sluggishness and mild LV systolic dysfunction. We counseled her regarding the risk of recurrence of PPCM in a subsequent pregnancy, contraceptive plan, and strict adherence to follow-up, and she was discharged. Repeat echocardiogram at 6 weeks postpartum was found to be within normal limits on follow-up.

Discussion

Though multifactorial etiologies including oxidative stress due to angiogenic imbalance, altered prolactin processing, genetic causes, autoimmune causes, hemodynamic, hormonal, and inflammatory factors are proposed for PPCM, the exact pathogenesis is still debatable. The possibility of a cardioplacental syndrome is also under research due to increased association of pre-eclampsia and PPCM. Women with PPCM usually have exaggerated normal pregnancy symptoms and typically present with symptoms of congestion like dyspnea on exertion, orthopnea, paroxysmal nocturnal dyspnea, fatigue, cough, hemoptysis, and edema of lower extremities. An initial evaluation is with history, clinical examination followed by electrocardiography, echocardiogram, CBC, BNP, LFT, urinalysis, chest X-ray, computed tomography, and angiography, if indicated. The diagnosis of PPCM requires excluding other causes of cardiomyopathy. Antenatal presentation occurs in <10% of cases as usually the symptoms develop within 4–6 post delivery. Asymptomatic latent forms of PPCM are also reported. Life-threatening complications include heart failure, cardiogenic shock, arrhythmia, and thromboembolism. Effective management of PPCM is made possible because of diagnostic advancements and increased awareness of the condition.

Clinical Significance

Because of limited studies, PPCM management recommendations are generally extrapolated from other forms of heart failure with reduced ejection fraction. The management can be categorized into treatment of heart failure, arrhythmia, thrombotic events, depressing neurohormonal responses, and supportive care. The most commonly used drugs are beta blockers and loop diuretics and vasodilators (category C).[3] Bleeding diathesis and hyponatremia have been reported in neonates of women using thiazide diuretics in pregnancy. Preference is given to beta 1-selective drugs like metoprolol as they are less likely to interfere with beta 2-mediated uterine relaxation and peripheral vasodilatation. In cases where PPCM is accompanied by preeclampsia or gestational hypertension, the use of labetalol is beneficial. Angiotensin 2 receptor blockers and ACE inhibitors that are the mainstay of treatment in nonpregnant states are contraindicated (category D) in pregnancy and lactation. Levosimendan, a calcium-sensitizing agent, provides superior results when used for inotropic support. In cases of imminent heart failure, the need for intubation, intra-aortic balloon counter-pulsation pump (IABP), left ventricular assist device (LVAD), or transplantation can arise. Our case of PPCM was identified and managed, especially with diuretics and thromboprophylaxis, but the need for beta blockers and other treatment options was not present.

Complications

Most deaths occur within 3 months of delivery most commonly due to progression of heart failure or sudden death related to cardiac dysrhythmias (2.6%) or thromboembolic events (6.6%). LMWH and unfractionated heparin are preferred as they do not cross the placenta. Warfarin (category D) is best avoided in the last trimester of pregnancy, but it is compatible with breastfeeding. Cardioversion and defibrillation are safe throughout pregnancy and can be performed in emergencies without delay. Fetal monitoring during cardioversion is essential as secondary fetal arrhythmias have been reported. Implantable cardioverter defibrillator (ICD) is indicated in a selected group of patients, but early implantation is discouraged as these patients have a high recovery rate.

Delivery

There is no indication for termination of pregnancy in stable patients. Timing and mode of delivery depend on the

hemodynamic status of the mother. Lateral decubitus position to limit aortocaval compression, labor analgesia to minimize pain-related hemodynamic stress, and instrumental vaginal delivery to decrease the negative effects of Valsalva maneuver are recommended. There is no contraindication to oxytocin. Cesarean delivery should be considered in cases of acute heart failure. The use of bromocriptine in women with severe left ventricular dysfunction is recommended by some experts inspite of inadequate evidence.[4]

Contraception

The UK Medical Eligibility Criteria recommend copper or levonorgestrel IUD, DMPA, and progestin-only pills as category I in normal cardiac function and category II in patients with impaired cardiac function. Combined OCPs are category II in normal cardiac function and category IV in patients with impaired cardiac function.

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