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Case Report

Successful Management of Peripartum Cardiomyopathy

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Abstract

30-year-old parturient with lower limb edema underwent cesarean section under spinal anesthesia developed peripartum cardiomyopathy treated successfully as acute heart failure.

Keywords: *Cardiomyopathy; Peripartum; Cesarean*

Abbreviations

Mg: Milligram; Kg: Kilogram; Cm: Centimeter; %: Percentage; PaCO2: Carbon Dioxide Alveolar Partial Pressure; O2 Sat: Oxygen Saturation; MmHg: Millimeter Mercury; ICU: Intensive Care Unit; Bpm: Breathe Per Minute; ABGs- Arterial Blood Gases; ECG-:Electrocardiogram; BP: Blood Pressure; HR: Heart Rate; CXR: Chest X Ray; Temp: Temperature; JVP: Jugular Venous Pressure; CT: Computed Tomography; MRI: Magnetic Resonance Imaging; LMWH: Low Molecular Weight Heparin; ACE-I: Angiotensin-Converting Enzyme Inhibitors; ARB: Angiotensin Receptor Blockers; LVAD: Left Ventricular Assist Device; PCR: Polymerase Chain Reaction; EF: Ejection Fraction; PPCM: Peripartum Cardiomyopathy

Introduction

Idiopathic cardiomyopathy presenting with heart failure signs and symptoms secondary to LV systolic dysfunction near the end of pregnancy or in the months following delivery, as no other cause of heart failure is found. It is a diagnosis of exclusion.

Consent

The patient is consented.

Case Report

A 30-year-old female patient, 80 Kg, 165 cm, Gravida1 Para 0 with 31 + 1 weeks of gestation, she was known case of primary infertility in the last 10 years. *In Vitro* fertilization was successful injected with triplet pregnancy. She was admitted via emergency room complaining of preterm labor.

She also, started to complain of both lower limbs swelling. Laboratory blood tests revealed hypoalbuminemia and trial of exogenous albumin was administered as nephrology team consultation: PCR is negative for nephrotic syndrome, with normal liver function test and they were advised not to give diuretics (as risk for placental insufficiency).

Her lower limbs edema was explained by her multiple gestations. It was planned for cesarean-section at 34 + 2 gestational week of age under spinal anesthesia.

3 hours after her cesarean section under spinal anesthesia due to preterm labor, the patient developed sudden onset shortness of breath and palpitation.

Obstetric team ordered: ABG's, urgent chest x-ray, and cardiac enzyme. Respiratory team was consulted regarding her respiratory distress condition along with vital signs: BP: 150/80 mmHg HR: 118 beat/min Temp: 37.1 C RR: 28/min, O2 saturation: 87% and her clinical examination revealed poor air entry bilaterally, JVP was elevated, + 4 lower limbs edema, ABG on room air: 7.40/ 27/ 16.3/ 17.3/ -6.7/ 48/ 82%, her ECG was sinus tachycardia and CXR with pulmonary edema and dilated left ventricle giving a differential diagnosis of Acute pulmonary edema or Pulmonary embolism" amniotic fluid embolism".

The next plan was to do Echo Cardiogram, she was transferred to ICU for closer monitoring, and starting her on therapeutic LMWH. C.T Angiogram was ordered to rule out PE when the patient was stabilized along with oxygen therapy.

Echo cardiogram revealed: LV EF 25%, Grade 2 (moderate) mitral regurgitation, which gave the diagnosis of peripartum cardiomyopathy.

She was managed as acute decompensate heart failure. She was started on intravenous furosemide, oral spironolactone and Beta blocker, with strict input and output while keeping her in the ICU for 5 days. Follow up echo cardiogram was done after one week: LV EF 40%, left atrial enlargement, and grade 1 (mild) mitral regurgitation.

She was discharged home on oral Angiotensin receptor blocker 80mg once daily, furosemide 40mg, and on Beta blocker.

Discussion

Peripartum cardiomyopathy (PPCM) is a form of dilated cardiomyopathy where a deterioration in normal cardiac function presenting between the last month of pregnancy and up to six months following delivery. PPCM involves systolic dysfunction of the heart with a decrease of the left ventricular ejection fraction (EF) associated with congestive heart failure signs and symptoms. There is an increased risk of atrial and ventricular arrhythmias, thromboembolism, and even sudden cardiac death [1-5].

PPCM is a diagnosis of exclusion, presented patients have no prior history of heart disease or other known possible causes of heart failure. Echocardiogram is the diagnostic as well as the effective method of treatment progress for PPCM [1-5].

The cause of PPCM is idiopathic. Currently, researchers are investigating specific cardiac viruses, or immune system dysfunction(through toxins that might serve as triggers), micronutrient or trace mineral deficiencies, and genetics is a key component might contribute to the development of PPCM [1,3,6].

Symptoms usually include one or more of the following: orthopnea, dyspnea, pitting edema, cough, nocturia, excessive weight gain during the last month of pregnancy, palpitations and chest pain [1,3].

Unfortunately, patients and clinicians sometimes ignore these early symptoms because they appear similar of normal pregnancy, as initially presented in our case. So, early detection and treatment are essential to the patient with PPCM. As delay in diagnosis and treatment of PPCM is associated with increased risk of morbidity and mortality [1,3,4,5,8,9].

High suspicion of PPCM in any peri- or postpartum patient where unusual or unexplained symptoms or presentations occur is of a paramount [1,3,7,10,11].

Early detection and treatment are associated with successful rates of recovery and decreased the percentage of morbidity and mortality [1,3,4,5,8,9].

Treatment for PPCM is like treatment for congestive heart failure which consist of the use of diuretics, beta blockers (B-B), and angiotensin-converting enzyme inhibitors (ACE-I) after delivery. Diuretics mostly used furosemide, help the body to get rid of excess water and lower blood pressure. Adding ACE-I and B-B improve blood circulation and contribute to the reversal of the immune system dysfunction. In not well tolerated patients with ACE-I like ours, it can be replaced by angiotensin receptor blockers (ARB). In breastfeeding mothers or before delivery hydralazine with nitrates may replace ACE-I ; however, evidence suggests that this course of treatment is beneficial but not effective as ACE-I [1,3-5,7,9,13].

In cases with EF is less than 35%, anticoagulation is mandatory, as there is a greater risk of developing left ventricular thrombi. Implantation of a left ventricular assist device (LVAD) or even heart transplant also becomes necessary in some cases [1,4,5,7,14].

It is important that the patient receives regular follow-up care with frequent echo, as we did in our patient, to monitor improvement or deterioration of their heart status.

Patients who fail to respond to initial treatment, as left ventricular EF remaining below 20% after two months or below 40% after three months with conventional treatment; require further investigation, including cardiac magnetic resonance imaging (MRI), cardiac catheterization, and endomyocardial biopsy and for viral polymerase chain reaction (PCR) analysis [7].

Most recent studies show that newer conventional heart failure treatment consisting of diuretics, ACE inhibitors and beta blockers, the survival rate is very high at 98% and PPCM patients improve with this treatment [13,15,16].

Recovery depends upon improvement or recovery within the first six to 12 months of diagnosis like our case. Still, many women continue to improve or recover even years after diagnosis with continued medical follow up treatment [3,17]. Once fully recovered, it's better to avoid subsequent pregnancy, as the possibility of relapse or recurrence of heart failure is minimal [13,16].

Subsequent pregnancy absolutely should be avoided if left ventricular function has not recovered and the EF is lower than 55% [1,18]. The chance of relapse may be even smaller for those with normal EF demonstrated by stress echocardiography [18-20]. careful monitoring is necessary in any subsequent pregnancy. In case relapse occurs, conventional treatment should be started, including hydralazine with nitrates or ACE-inhibitors plus beta-blockers, during and following pregnancy.

Conclusion

Peripartum cardiomyopathy occurring in normal pregnancy should be treated like any other cardiac failure along with anti coagulant therapy. Epidural anesthesia is preferable with close observation and monitoring in ICU.

Declarations

I declare that I have no competing interests.

Availability of Data and Materials

Not applicable.

Ethical Approval

Not required.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and/or any accompanying images.

Competing Interests

None.

Funding

None.

Author Contribution

A. AJ has written the case report and he is the doctor in charge of the patient.

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