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Peripartum Cardiomyopathy in a nulliparous female: A case report

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Abstract

Peripartum cardiomyopathy (PPCM) is a dilated cardiomyopathy defined as systolic cardiac heart failure in the last month of pregnancy or within five months of delivery. Risk factors include multiparity, black race, older maternal age, pre-eclampsia, and gestational hypertension. Its incidence is variable, ranging from 1 in 1300 to 1 in 15,000 pregnancies. Although the complete pathophysiology of peripartum cardiomyopathy remains unclear, research over the past decade suggests the importance of vasculo-hormonal pathways in women with underlying susceptibility.

At least some women with the condition harbor an underlying sarcomere gene mutation. Our case report describes a case of a patient, who was admitted for shortness of breath rapidly worsening into heart failure closely after spontaneous delivery. As the cause of the symptoms was diagnosed as heart failure due to peripartum cardiomyopathy, the treatment was symptomatic by diuretics, inotropes, beta-blockers and ACEIs.

The mechanical cardiac support was not required. The signs of heart failure subsided within 4 weeks, and in the subsequent period, the left ventricular ejection fraction turned to its previous level as well.

Keywords: Cardiomyopathy, echocardiography, peripartum, pregnancy.

Introduction

Peripartum cardiomyopathy (PPCM) is an idiopathic cardiomyopathy, characterized by the heart failure, left ventricular systolic dysfunction towards the end of pregnancy or WITHIN 5 months of delivery, when no other cause of the heart failure is found (1). The exact pathogenetic mechanism is not fully understood. Several pathogenetic factors are as follows: inflammatory, infectious, genetic, autoimmune, oxidative stress.

The diagnosis is confirmed on the basis of diagnostic criteria (2): a) development of the heart failure during the last month of pregnancy or within 5 months of delivery; b) absence of an identifiable cause for the heart failure; c) absence of recognizable heart disease prior to the last month of pregnancy; d) left ventricular dysfunction determined during echocardiography with ejection fraction <45% (3). Symptoms of PPCM, which include fatigue, edema, and dyspnea, are similar to those for the normal spectrum of peripartum states and pregnancy comordities such as pulmonary emboli and eclampsia. Mortality is as high as 20% to 50%. (4)

Case Report

A 27 years old (G1P0) pregnant woman was referred to Department of Cardiology for further evaluation of heart failure in pregnancy. The patient had no history of acquired/congenital heart disease, myocarditis, heart valve disease, myocardiopathy or autoimmune disease before pregnancy, and also had no history of drug, cigarette, alcohol or drug use, no known allergy. She was diagnosed with pre-eclampsia early in pregnancy. On examination, the woman was afebrile and orthopnoeic with mild pallor. She had a respiratory rate of 30/min, pulse rate of 135 beats/min along with blood pressure of 140/90 mmHg. She was transferred to the cardiac intensive care unit and received supplemental oxygen and noninvasive ventilation.

Chest X-ray at admission had features of cardiomegaly and pulmonary edema. Electrocardiography (ECG) showed sinus tachycardia at 120 beats per minute and negative T waves in V1 and V2. Echocardiography findings were consistent with Dilated Cardiomyopathy with ejection fraction (EF) of 15-20% and features of congestive cardiac failure. There were also regional wall motion abnormalities with severe global hypokinesia, mild to moderate mitral regurgitation and moderately severe pulmonary hypertension.

Respiratory distress was progressive due to worsening heart failure. Supportive management included propped up position, moist oxygen inhalation, inotropic drugs, parenteral diuretics, beta-blockers and ACEIs. She well-tailored the medical therapy and was discharged uneventfully after 12 days of delivery. Her follow-up echocardiogram three months later showed normalization of her ejection fraction to 60%.

Discussion

In our case, peripartum cardiomyopathy was diagnosed according to its diagnostic criteria (2). In this case, PPCM was clinically observed one day after the delievery. According to literature, 93% of PPCM occur after delivery, of which 75% occur in the first month after delivery, and only 7% during the last trimester of pregnancy (5). Although its exact cause is unknown, peripartum cardiomyopathy is thought to result from increased cardiac stress due to the increased blood volume during pregnancy (6).

Mother's age, obesity, alcoholism, smoking, number of pregnancies, multiple pregnancy, preeclamsia, gestational hypertension and previous history of certain cardiac disorders are the major risk factors for peripartum cardiomyopathy. In our case the patient was diagnosed with pre-eclampsia early in pregnancy.

As other cardiomyopathies, cardiomyopathy in pregnant women without underlying cardiac disease is characterized by the development of systolic dysfunction resulting in cardiac decline of left ventricular ejection fraction. Imaging studies include electrocardiography, chest radiography, and echocardiography. Electrocardiographic findings are often normal but can include sinus tachycardia, nonspecific ST- and T-wave abnormalities, and voltage abnormalities (7). Chest radiographs can show signs of pulmonary congestion, cardiac enlargement, and even pleural effusions in some cases (8). Echocardiograms usually show decreased contractility and LV enlargement without hypertrophy (9). Approximately half of the cases show spontaneous and complete recovery of left ventricular function after pregnancy. However, there may be a more progressive disease pattern that may require intensive treatments and even cardiac transplantation. Early diagnosis and treatment is very important (10,11).

The main treatment strategies of peripartum cardiomyopathy should include oxygen supplementation, salt restriction, diuretics, digital and vasodilating agents.

Cardiac transplantation is the only option for patients not responding to medical treatment (11).

Women with a history of PPCM should be counseled about the risks of subsequent pregnancy and should be followed closely throughout pregnancy and until six months postpartum with frequent clinical examinations and serial echocardiograms (12).

Conclusion

Peripartum cardiomyopathy is a rare disease of unknown cause that strikes women in the childbearing years, may recur, and is associated with a high mortality rate. The clinicians should keep in mind the diagnosis of PPCM in young woman with pregnancy in third trimester and having heart failure symptoms even following delivery. Diagnosis of PPCM is challenging and requires vigilance. The main objective of treatment is to reduce the symptoms of congestive heart failure.

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