CASE REPORT

A Case of Peripartum Cardiomyopathy in Saudi Arabia

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Abstract

Peripartum cardiomyopathy is a rare idiopathic condition that affects pregnant women from their last month of gestation up to five months of their postpartum period. Its symptoms are similar to those of a heart failure, which mimic the exaggerated physiological symptoms of pregnancy. In Saudi Arabia, there is only one study that, so far, reported cases of obscure peripartum cardiomyopathy. Here, we discuss a case of this rare condition. A young pregnant lady was admitted with anemia and premature contractions. Two days later, she developed an acute heart failure. Her echocardiography test confirmed a reduced left ventricular ejection fraction. The secondary causes of heart failure were then excluded. A diagnosis for peripartum cardiomyopathy was made, and the patient was treated accordingly. Peripartum cardiomyopathy in pregnant women must be considered in cases of heart failure presented during such period.

Keywords

Peripartum cardiomyopathy; Heart failure; Echocardiogram

Introduction

Peripartum cardiomyopathy (PPCM) is a rare disease that affects pregnant women between the last month of their gestation and five months of their postpartum period[1]. Its etiology is unknown, while its incidence is 1/2,000 of live births[2]. Its incidence increases with multiparity, twin pregnancy, caesarean section delivery, advanced maternal age, black race, hypertension, preeclampsia, anemia, smoking, and the use of tocolytic agent[3,4]. Although the exact cause of PPCM is obscure, certain conditions were suggested as possible predisposing factors, such as viral myocarditis, genetic mutations that disturb prolactin synthesis, autoimmune diseases, and maternal cardiac muscle insult by antibodies against escaping fetal cells[3-5]. Its severity ranges from mild symptoms, including dyspnea, orthopnea, cough, and lower limb edema, to severe pulmonary edema with or without complications, like thrombosis and arrythmia.

The criteria use in PPCM diagnosis are 1) heart failure that affects the last month of pregnancy and up to five months of postpartum, 2) no identifiable cause of failure, 3) no previous cardiac illness, and 4) left ventricular ejection fraction (LVEF) of <45%[4]. Its management is the same as that used for treating heart failure. Its medications include digitalis, diuretics, vasodilators, angiotensin-converting enzyme (ACE) inhibitors and blockers, β-blockers, and anticoagulants. The medications that may affect pregnancy and lactation should be avoided[3]. ACE inhibitors and blockers are teratogenic and should be limited after delivery. Mothers are instructed not to breastfeed, because these medications are excreted in their milk. β-selective β-blockers are preferred over the non-selective medications because of the anti-tocolytic effects of the non-selective ones[6]. Anticoagulant therapy is important because of the hyper-coagulable state during the peripartum period and because

of the heart failure. Atrial fibrillation is the most common arrhythmia in PPCM patients, and quinidine, procainamide, and digitalis are considered safe during pregnancy[5].

In Saudi Arabia, there has been only one study that was carried out on peripartum cardiomyopathy, which reported seven obscure cases[7]. Here, we discuss a case of this rare condition.

Case Report

A 24-year-old female patient, gravida 3+2, was admitted to the obstetric ward due to premature uterine contractions without vaginal discharge, which had started a few hours before admission (refer to timeline in Fig. 1). She was 34 weeks and 4 days pregnant. She had no known cardiac, respiratory, or rheumatological diseases or hypertension. She had early pregnancy hyperemesis gravidarum. She was not a smoker.

Her vital signs during presentation were stable, and her chest, cardiac, abdominal, and vaginal examination results were unremarkable. Cardiotocography showed that the frequency of her contractions was 1 in every 10 minutes. Her complete blood count (CBC), urea and electrolyte levels (U&E's), liver function tests (LFT), and international normalized ratio were within the normal range, except for her hemoglobin level, which was 7.4 g/dL. The results of her urinalysis showed +2 leukocytes, and her urine culture tested negative.

She was started on intramuscular dexamethasone, taken every eight hours, intravenous atosiban, and ampicillin, and was transfused with a one unit of packed red blood cells over four hours. Her post-transfusion hemoglobin level was 9.4 g%. Her uterine contractions subsided on the second day after admission, and atosiban was discontinued. On the third day, she had acute dyspnea, and her O_2 saturation dropped to 91%, but it increased to 98% with 10-L O_2 *via* a face mask. Her vital signs during her acute dyspnea attack were: a blood pressure (BP) of 170/110 mmHg, which dropped to 135/90 mmHg, when oxygenation improved; a pulse rate of 90/min; and a respiratory rate of 24 breaths/min. Her chest examination showed a decreased level

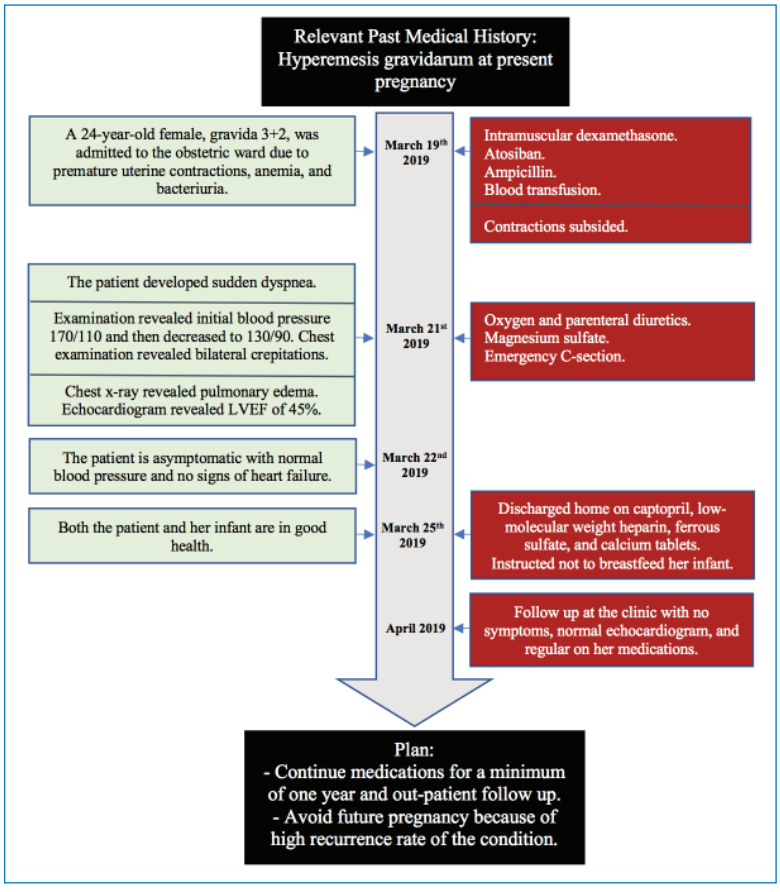

Figure 1. **Timeline of the conditions of the patient and the treatments administered to her.**

of air entry with bilateral crepitations. Cardiovascular examination revealed a jugular venous pressure of 2 cm H_2O, no lower limb edema, and no murmur or added sounds on cardiac auscultation. Abdominal examination revealed no tenderness.

Her immediate chest X-ray revealed cardiomegaly with pulmonary edema (Fig. 2), and her electrocardiogram was normal. Her arterial blood gases showed respiratory alkalosis. She was started on intravenous furosemide and magnesium sulfate.

Pre-eclampsia test, using the evaluation of her CBC, U&E's, LFT, uric acid, coagulation profile, antiphospholipid antibodies, urine analysis, and urinary protein and creatinine, was performed, along with a full septic screen. All test results were within normal ranges. Her troponin levels on the first, second, and third day of the acute event were 0.02, 0.05, and 0.02 ng/mL, respectively, which are within the normal range.

Her immediate echocardiogram revealed a LVEF of 45% and a mildly decreased global left ventricular systolic function (Fig. 3). The results of her computed tomography pulmonary angiogram ruled out acute pulmonary embolism. A diagnosis of PPCM was made.

An emergency caesarean section was planned for her, which was performed by the caring obstetrician. The patient was monitored in the intensive care unit for one day after the operation. Her condition was stable, and she had normal BP, with no symptoms or signs of heart failure. So, magnesium sulfate was discontinued. She was started on Captopril, low-molecular weight heparin, ferrous sulfate, and calcium tablets.

Her chest X-ray on the second postoperative day was normal, and her condition continued to be stable, until she was discharged postoperatively on the fifth day. She was advised to continue her medications for a minimum of one year and not to breastfeed her baby, because captopril, one of her medications, is excreted with the milk. She was also advised to avoid

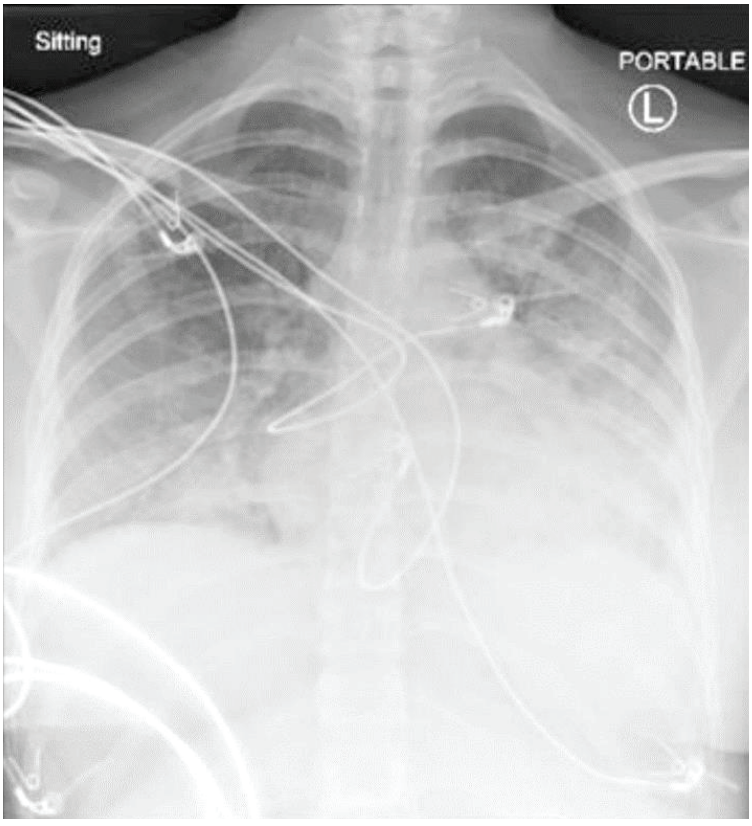

Figure 2. Chest X-ray image of the patient during an acute attack of shortness of breath, showing cardiomegaly with pulmonary edema.

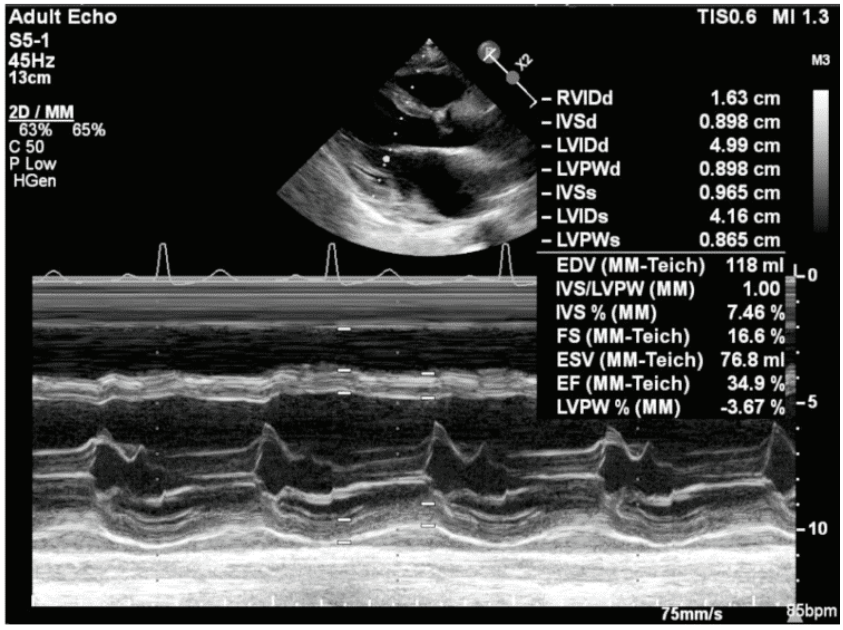

Figure 3. Echocardiogram of the patient during an acute attack of shortness of breath, showing the left ventricular ejection fraction at 45% and the mildly decreased global left ventricular systolic function.

future pregnancy because of the high recurrence rate of this condition, and to visit the out-patient clinic in two weeks.

The patient was periodically followed up. She was asymptomatic and regularly took her medications. Her follow-up echocardiogram showed an improved LVEF.

Discussion

Peripartum cardiomyopathy is a rare disease, with a recurrence rate of up to 30%. Its recurrence is more common in patients with persistent residual left ventricular dysfunction[4]. Low ejection fraction, left ventricular thrombosis, and delayed recovery are the indicators of poor outcomes[1].

Certain tests are used to assess the prognosis of this condition, including the dobutamine stress echocardiogram in non-critically ill patients and the delayed gadolinium enhancement by magnetic resonance imaging in cases of slow responses to conventional treatment. Even with complete recovery, treatment with β-blockers and ACE inhibitors and blockers should be continued for a minimum of one year.

The prognosis of PPCM is usually good, with only a low percentage of patients having persistent heart failure with or without complication[8]. The patient was multiparous and had anemia and late pregnancy hypertension, which are considered risk factors for PPCM. Her clinical presentation met the criteria for the diagnosis of PPCM, and her echocardiogram results confirmed it. As her symptoms developed while she was in the hospital, this early detection of the symptoms permitted the early recognition and management of her case to be carried out, which contributed to a favorable outcome.

A transfusion-associated circulatory overload (TACO) was considered a differential diagnosis in this case, but since the acute dyspnea developed more than one day after the blood transfusion and the amount of blood transfused was limited to one unit over four hours, the possibility of her having a TACO was excluded[9].

Transfusion-related acute lung injury (TRALI) is a rare but a critical complication of blood transfusion. The acute lung injury may develop within the first 6 hours of the transfusion. Its increased incidence has been reported in patients with end-stage liver disease, coronary artery bypass surgeries, and massive blood transfusions. Its clinical symptoms include acute dyspnea, fever, hypotension, and cyanosis. Physical examination has revealed lung crepitations but not heart failures. Radiographic chest examination has

also shown non-cardiogenic pulmonary edema[10]. In our case, however, TRALI was eliminated, because the patient's acute dyspnea started after more than 24 hours from the administration of blood transfusion, and the patient had cardiac pulmonary edema. In addition, our patient did not possess any of the previously mentioned predisposing factors.

Conclusion

In conclusion, a PPCM must be considered in presenting patients with heart failure during their late pregnancy and early postpartum period.

Conflict of Interest

The authors declares that they have no conflict of interest that is related to this study and this article.

Disclosure

The author did not receive any type of commercial support or compensation for this study. The author has no financial interest in any of the products, devices, or drugs that were mentioned in this article.

Ethical Approval

This case report was conducted ethically in accordance with the stipulations of the World Medical Association Declaration of Helsinki.

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تقرير حالة اعتلال عضلة القلب في الفترة المحيطة بالولادة في المملكة العربية السعودية

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المستخلص. اعتلال عضلة القلب في الفترة المحيطة بالولادة هي حالة نادرة مجهولة السبب تصيب السيدات الحوامل في فترة ما بين آخر شهر من الحمل إلى خمسة أشهر بعد الولادة، و الأعراض تكون مشابهة لأعراض فشل القلب، وهذه الأعراض قد تحاكي أعراض الحمل المفرطة، وعلى مستوى المملكة العربية السعودية توجد دراسة واحدة فقط ذكرت حالات غامضة لاعتلال عضلة القلب في الفترة المحيطة بالولادة، هنا سوف نستعرض حالة تم تشخيصها بهذا المرض، وهي امرأة شابة حامل أدخلت إلى المستشفى تعاني من فقر دم، وتقلصات رحمية مبكرة، و بعد يومين أصيبت بفشل قلبي حاد، أظهر تخطيط صدى القلب المقطعي انخفاض في الكسر القذفي للبطين الأيسر، و استبعدت الأسباب الثانوية المسببة لفشل القلب وشُخصت الحالة باعتلال عضلة القلب في الفترة المحيطة بالولادة، وعولجت على هذا الأساس.

ومن هذا يتضح أن اعتلال عضلة القلب في الفترة المحيطة بالولادة ينبغي أن يؤخذ بعين الاعتبار في حالات فشل القلب عند السيدات خلال هذه الفترة.