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CASE REPORT
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CASE REPORT: PERIPARTUM CARDIOMYOPATHY, A RARE BUT FATAL CONDITION IN PREGNANCY AND PUERPERIUM

Sadaf Abbas[1*], Himgauri Sabnis[2], Seema Ghani[3]

[1*]Speciality Doctor, St' Mary Hospital, Isle of Wight, NHS, England
[2]Consultant Obstetrics and Gynecology, St' Mary Hospital, Isle of Wight, NHS, England
[3]Speciality Doctor, Obstetrics and Gynecology, St' Mary Hospital, Isle of Wight, NHS England

***Corresponding Author:** Sadaf Abbas
*Email:dr.sadafshujaat@yahoo.com

ABSTRACT

Peripartum Cardiomyopathy (PPCM) is a rare but potentially deadly heart condition that occurs in previously healthy young women during late pregnancy or shortly after giving birth. It is marked by a weakening of the heart's left ventricle without any other known heart issues. PPCM has high rates of illness and death, making it one of the leading causes of maternal mortality. Despite significant progress in understanding PPCM over the past few decades, many questions about its underlying causes, diagnosis, and treatment remain unanswered. Although PPCM is rare, it needs quick and careful management. Early detection and timely treatment are crucial in lowering the risk of death for mothers. In this case report a 32-year-old woman, seven days postpartum, presented with acute shortness of breath, chest pain, and fever. Her medical history included smoking, class II obesity, pre-eclampsia, and HELLP syndrome. Clinical examination revealed persistent tachycardia and mild lung crepitation. Imaging and lab results indicated bilateral pulmonary congestion, elevated CRP, and a severely dilated left ventricle with an ejection fraction of 31%. She was diagnosed with congestive cardiac failure and managed with diuretics, beta-blockers, and ACE inhibitors. Post-treatment, the patient improved and was discharged with plans for cardiac MRI and genetic testing. This case is important for the diagnostic challenges of postpartum cardiomyopathy and the long-term follow-up to mitigate chronic heart failure risk.

Key words: Peripartum Cardiomyopathy, puerperium, Echocardiogram, Congestive cardiac failure.

Introduction

Peripartum cardiomyopathy, also called Meadow's Syndrome, is characterized as idiopathic systolic heart failure. This is the complication that occurs during the end of pregnancy or the early post-partum. The exact etiology of this type of complication is not known but it might be due to genetic mutation.(1) The prevalence is high world wise (1 in 1000 births), but it is most common among African ethnicity. Peripartum cardiomyopathy is more common in African-Americans (43.9%) women as compared with white (40.8%), Hispanic (8.7%). It is least prevalent among Asian (2.7%) women.(2) The risk factors are genetic predisposition, hormonal dysfunction, myocardial ischemia, multiparity, hypertensive pregnant women and advance maternal age.(3, 4) In peripartum cardiomyopathy the symptoms resembles those of heart failure and its acute presentation leads to delayed diagnosis. The diagnostic tests are ECG, natriuretic peptide and echocardiography which shows decreased myocardial function. There is no significant importance of cardiac MRI. It

is essential to make differential diagnosis of heart failure, pulmonary embolism and eclampsia during pregnancy.(5)
The management of acute peripartum cardiomyopathy is as that of heart failure along with medical treatment. The conventional treatment alone or combined with bromocriptine is given to improve the ejection fraction. Conversion enzyme inhibitor, beta-blocker and diuretic, anticoagulation is necessary when thromboembolic complications are associated.(6)

Outcome of PPCM varies with either complete recovery from disease or leads to chronic progressive heart failure.(7) The complete recovery is highly dependent upon ejection fraction, greater the ejection fraction greater is the chance of recovery. The prognosis of peripartum cardiomyopathy is poor as it causes increase morbidity and mortality. The associated complications include persistent heart failure, increase risk in subsequent pregnancies and death of mother or neonate.(8)

Case presentation
A 32 years old pregnant female, Gravida 3 Para2+1 presented to the Emergency Department of St'Marry Hospital, Isle of Wight, on her seventh day postpartum. Her presenting complain was acute shortness of breath (SOB), chest pain, cough, and a temperature of 38 degrees from last 2 hours. The risk factors were smoking and class II obesity (BMI of 40.62). The patient had mild pre-eclampsia in the last pregnancy and was on labetalol and aspirin during an antenatal period, which was stopped postnatally. There was also a history of pre-eclampsia and hemolysis, elevated liver enzymes, low platelets (HELLP syndrome) in previous pregnancies, which led to preterm delivery at 35 weeks in the second pregnancy, and the first baby was stillborn at 24 weeks.

On examination, there was a national early warning score (NEWS score) of 3, persistent tachycardia, and mild crepitation in the lungs.

Initial investigations revealed ECG changes were not significant as shown in figure 1. An enlarged heart on chest X-ray (figure 2) and a CT pulmonary angiogram indicated bilateral basal pulmonary congestion without pulmonary embolism, suggesting fluid overload. Laboratory results showed elevated CRP and normal troponin levels initially, which later increased, indicating myocardial involvement. Echocardiography revealed a severely dilated left ventricle with an ejection fraction (EF) of 31%, consistent with severely impaired systolic function. The cardiology team reviewed the patient and admitted to the Coronary Care Unit.

As sign and symptoms were suggestive of fluid overload and congestive cardiac failure, management was done with diuretics, beta-blockers, angiotensin-converting enzyme inhibitors (ACE inhibitors), proton pump inhibitors, and supportive care. During admission, there was complications such as acute kidney injury, but then recovered well. Chest pain had resolved following the treatment. After being admitted for eight days, there was an improvement in the symptoms, and the patient was discharged home with a further plan of cardiac MRI and genetic testing due to a family history of sudden cardiac death. Regular appointment has been made with the Cardiology team to follow-up on the symptoms. Since discharge, the patient made a good recovery. A cardiac MRI was done, which showed severely impaired left ventricular function, ejection fraction (EF) of 38% with mild left ventricular dilatation, and no evidence of previous infarction. Overall appearance is of non-ischemic dilated cardiomyopathy. The main challenge at the time of admission was the non-availability of a cardiac radiology team, so the definitive diagnosis was delayed. The long-term implications include risk of recurrence, chronic heart failure, and, consequently, an effect on quality of life. Therefore, regular follow-up is critical in patient's management.

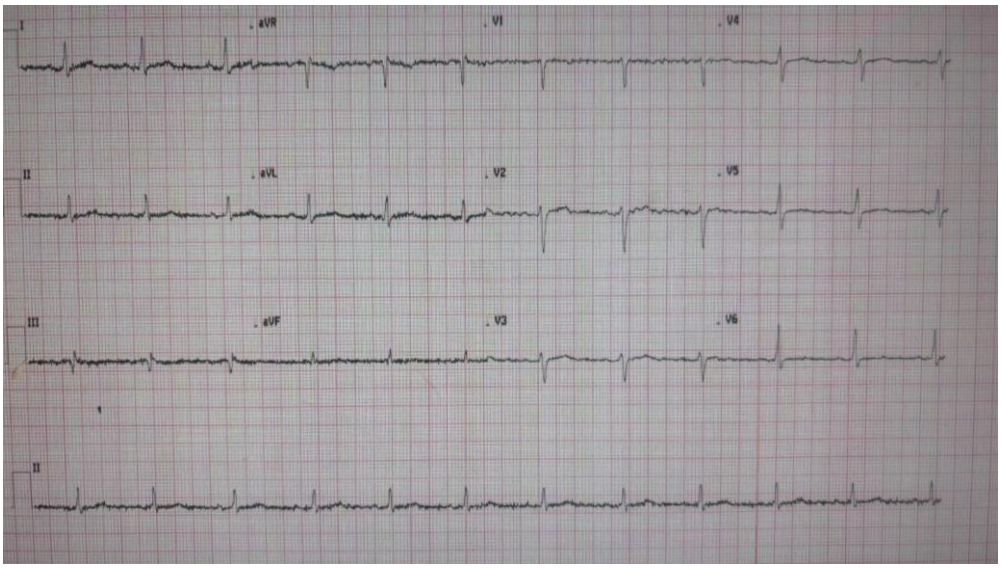

Figure 1: ECG without any significant changes.

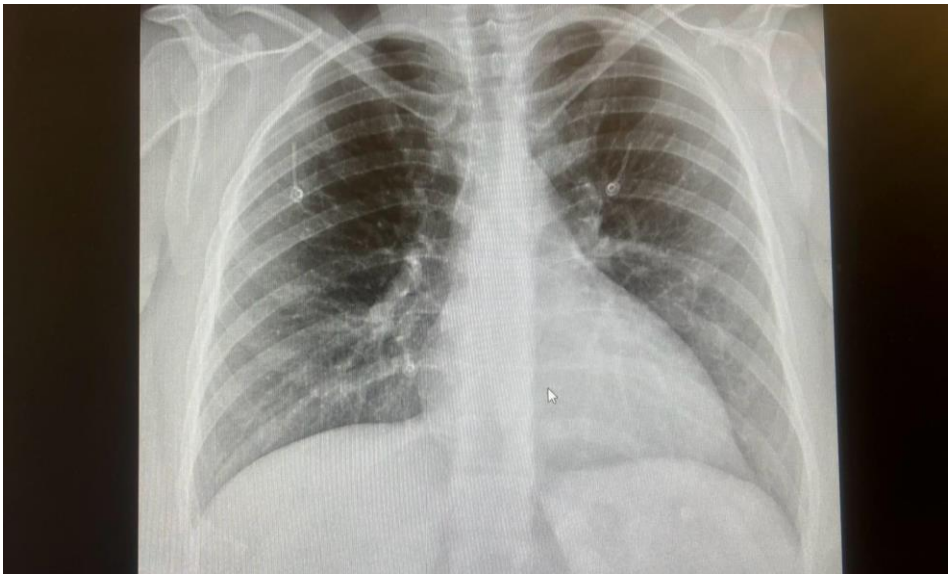

Figure 2: Xray chest shows cardiomegaly, airspace opacification within the left mid lower zone.

Discussion

This case report shows a rare case of PPCM on 7th day of postpartum period. The diagnosis was made on the basis of ECG, chest X-ray and laboratory findings. Her acute presentation with severe shortness of breath, chest pain and cough were similar to symptoms of heart failure.(9) The female was grade II pre-pregnancy obese, in another study, women had 3.4 per 10000 live births, with raised BMI, increase chance of peripartum cardiomyopathy as compare to normal BMI females.(10) The risk factor of peripartum cardiomyopathy was raised in this case as patient had preeclampsia in previous pregnancy. A cohort of African pregnant females with preeclampsia showed high incidence of peripartum cardiomyopathy.(11)

The diagnosis was made on basis of clinical presentation of shortness of breath, cough and chest pain which corelate with the symptoms of heart failure.(12) There was no significant findings in ECG as in other study normal ECG findings does not rule out PPCM.(13) Cardiomegaly in chest Xray along with alveolar ground glass opacification in left lung were suggestive of congestive cardiac failure. CT angiogram aorta showed no aortic aneurism, no pulmonary embolism and no pericardial effusion to rule out this differential diagnosis.

The management was done according to standard guidelines. The hemodynamics were stabilized as patient presented with acute symptoms. Oxygen saturation was maintained at >95% with continuous monitoring with pulse oximeter. Diuretics, beta-blockers, angiotensin-converting enzyme inhibitors (ACE inhibitors), proton pump inhibitors were given in infusion. It has been recommended that carvedilol combined with a blocker is used to reduce peripheral vasoconstriction in PPCM.(14) The associated complications of PPCM were impaired renal function were managed during hospital stay.

The patient was counseled for dietary modification with low salt intake and appropriate food intake. As mother is lactating so she was advised to breastfeed her child with recommended diet. Patient was also advised for follow up, continuous screening with cardiac MRI and genetic screening for safe subsequent pregnancies.(15)

Conclusion

This case report highlights the significance of early diagnosis and immediate treatment for the management of peripartum cardiomyopathy among women during puerperium. The early detection of risk factors among pregnant female in late gestation and early puerperium prevents PPCM and its complications. This case also highlights the complexity and severity of postpartum cardiomyopathy (PPCM) in a previously healthy young woman, emphasizing the need for early recognition and prompt treatment to prevent serious outcomes. Follow-up is important to monitor and manage the long-term complications of PPCM, such as chronic heart failure and potential recurrence.

References:

1. Honigberg MC, Givertz MM. Peripartum cardiomyopathy. Bmj. 2019;364:k5287.
2. Krishnamoorthy P, Garg J, Palaniswamy C, Pandey A, Ahmad H, Frishman WH, et al. Epidemiology and outcomes of peripartum cardiomyopathy in the United States: findings from the Nationwide Inpatient Sample. Journal of Cardiovascular Medicine. 2016;17(10):756-61.
3. Iorgoveanu C, Zaghloul A, Ashwath M. Peripartum cardiomyopathy: a review. Heart Fail Rev. 2021;26(6):1287-96.
4. Ntusi NB, Mayosi BM. Aetiology and risk factors of peripartum cardiomyopathy: a systematic review. International journal of cardiology. 2009;131(2):168-79.
5. Blauwet LA, Cooper LT. Diagnosis and management of peripartum cardiomyopathy. Heart. 2011;97(23):1970-81.
6. Matemvu Z, Likapa H, Makin MS, Hossain O. Five cases of Peripartum Cardiomyopathy in Malawi. Malawi Med J. 2023;35(3):196-200.
7. Hoevelmann J, Engel ME, Muller E, Hohlfeld A, Böhm M, Sliwa K, et al. A global perspective on the management and outcomes of peripartum cardiomyopathy: a systematic review and meta-analysis. European Journal of Heart Failure. 2022;24(9):1719-36.
8. Bala R, Mehta S, Roy VC, Kaur G, de Marvao A. Peripartum cardiomyopathy: A review. Rev Port Cardiol. 2023;42(11):917-24.
9. Patel H, Berg M, Barasa A, Begley C, Schaufelberger M. Symptoms in women with Peripartum Cardiomyopathy: A mixed method study. Midwifery. 2016;32:14-20.
10. Cho S-H, Leonard SA, Lyndon A, Main EK, Abrams B, Hameed AB, et al. Pre-pregnancy obesity and the risk of peripartum cardiomyopathy. American journal of perinatology. 2021;38(12):1289-96.
11. Lindley KJ, Conner SN, Cahill AG, Novak E, Mann DL. Impact of preeclampsia on clinical and functional outcomes in women with peripartum cardiomyopathy. Circulation: Heart Failure. 2017;10(6):e003797.
12. Carlson S, Schultz J, Ramu B, Davis MB. Peripartum cardiomyopathy: risks diagnosis and management. Journal of Multidisciplinary Healthcare. 2023:1249-58.
13. Honigberg MC, Elkayam U, Rajagopalan N, Modi K, Briller JE, Drazner MH, et al. Electrocardiographic findings in peripartum cardiomyopathy. Clinical cardiology. 2019;42(5):524-9.

14. Kim M-J, Shin M-S. Practical management of peripartum cardiomyopathy. The Korean journal of internal medicine. 2017;32(3):393.
15. Elkayam U. Clinical characteristics of peripartum cardiomyopathy in the United States: diagnosis, prognosis, and management. Journal of the American College of Cardiology. 2011;58(7):659-70.