CASE REPORT

Exploring Heart Failure with Preserved Ejection Fraction in Pregnant Patients: A Case Report

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ABSTRACT

Pregnancy-associated heart failure with preserved ejection fraction (HFpEF) poses significant challenges in maternal healthcare, leading to increased morbidity and mortality. This case study details a patient with HFpEF who presented with dyspnea, fatigue, and edema. Initially misattributed to typical pregnancy changes, her heart failure symptoms required a tailored treatment approach, including medication adjustments, fluid management, and echocardiographic monitoring. The findings underscore the need for further research and updated guidelines to improve diagnosis and treatment of HFpEF in pregnancy. A multidisciplinary approach is essential for enhancing patient outcomes and understanding HFpEF's interplay with pregnancy physiology.
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INTRODUCTION

Heart Failure with Preserved Ejection Fraction (HFpEF) is becoming more widely acknowledged as a serious but little-researched maternal health concern. The complete impact of HFpEF on pregnancy outcomes is still unknown, despite recent research estimating its incidence to be between 1.1-2.5 per 1,000 pregnancies and 1.5-3.5 per 1,000 deliveries (1). Pregnancy-related HFpEF diagnosis has special difficulties. Many of the symptoms of HFpEF, like exhaustion, edema, and shortness of breath, are also frequently encountered during a typical pregnancy. The distinction between pathological disorders and normal pregnancy-related alterations is made more difficult by this overlap of symptoms (2). Moreover, structural and physiological changes during pregnancy may impair the accuracy of echocardiographic examinations, requiring a sophisticated approach to diagnosis. Excluding other possible causes of comparable symptoms, like preeclampsia or pregnancy hypertension, requires careful assessment.

Health hazards to the mother and fetus are markedly increased in pregnancy when HFpEF is present. Potential fetal issues include low birth weight, growth restriction, and preterm labor, while maternal risks include increased morbidity and mortality. This illustrates the unpredictable nature of HFpEF in this setting, as these risks can appear in women who have never had a history of heart disease. Efficient and precise echocardiographic evaluation is essential due to the intricacy of identifying and treating HFpEF in pregnancy. Implementing suitable management techniques to reduce risks is made possible by early identification. To provide comprehensive care, a multidisciplinary strategy integrating knowledge from cardiology, obstetrics, and neonatology is often used in treatment. By attending to the many requirements of patients suffering from HFpEF, this collaborative paradigm seeks to optimize outcomes for both mother and fetus.

CASE REPORT

The primary complaint of a 27-year-old woman who was a dichorionic diamniotic (DCDA) twin at 34 weeks of gestation was a diminished sense of fetal movement. She had a good perception of fetal movements. She did not report any leaks or vaginal bleeding, and she did not report experiencing any palpitations, retrosternal pain, coughing, or chest pain. There is no family history of heart conditions, no history of fever, or infection during the prenatal or periconceptional period. She has a documented history of GHTN and overt DM. The assessment revealed a steady pulse rate of 76 beats per minute. The reading was 110/70 mmHg. It was 96% saturation of room air and JVP was normal. The results of the cardiovascular exam were normal. A check of the

abdomen revealed a DCDA twin, the first of which was breech and not acting. For vaginal delivery, the cervical os was closed and the cervix was uneffaced.

Blood studies revealed normal liver and kidney function tests as well as blood counts. Due to a diminished sense of wild movements and the first twin being in the breech position, the patient was brought in for emergency LSCS. In the first and fifth minutes of life, she gave birth to two live children weighing 2.2 kg and 2.3 kg, respectively, with APGAR scores of 8/10 and 9/10. The patient required two liters of oxygen during the first post-operative time due to dyspnea and desaturation. Following the acquisition of a cardiology opinion and an echo, the ejection fraction was 62% with trivial MR, trivial TR, and mild PAH. Both the right side (200 ml) and the left side (75 ml) of the bilateral pleural effusion were visible on the USG and CT thorax (Fig. 1). After an ABG, respiratory alkalosis was found. The patient was moved to the critical care unit. BNP was determined to be 890. Cardiac failure with maintained ejection fraction was the patient's diagnosis. The patient was started on Neb Budamate, Neb.Duolin, and Tab Lasix 20 mg OD. Less than 50 cc of pleural fluid was found in the repeated USG thorax, and the repeat BNP after three days was 498. Following a review by a cardiologist, the patient was kept on a tab of Lasix 20 mg OD. The patient's condition improved, allowing for their discharge.

DISCUSSION

Pregnancy introduces significant physiological changes, including increased blood volume and cardiac output demands, alterations in blood pressure, and vascular resistance. These changes can exacerbate underlying cardiac conditions and heighten the risk of developing HFpEF. The physiological burden on the cardiovascular system during pregnancy can be substantial, making it a critical period for women with preexisting or emerging heart conditions. Risk factors for HFpEF in non-pregnant women include obesity, hypertension, metabolic syndrome, elevated fasting glucose levels, and atrial fibrillation. These factors contribute to the development and progression of HFpEF by influencing cardiac function and increasing systemic vascular resistance. Managing these modifiable risk factors outside of pregnancy through lifestyle modifications, medical management, and monitoring may help reduce the incidence of HFpEF. However, managing these conditions during pregnancy requires a nuanced approach to balance maternal and fetal health (3,4).

Figure 1: The bilateral pleural effusion is characterized by fluid accumulation in the pleural cavities on both sides.

The diagnosis of HFpEF during pregnancy is notably challenging. Symptoms such as fatigue, edema, and shortness of breath, which are common in pregnancy, overlap with those of HFpEF, complicating the diagnostic process. Additionally, echocardiographic accuracy can be diminished during pregnancy due to anatomical and physiological changes, further complicating the diagnosis. To ensure accurate diagnosis, healthcare providers must conduct a thorough evaluation, considering a broad differential diagnosis to rule out other conditions that might present with similar symptoms. The risks associated with HFpEF during pregnancy are significant and multifaceted. Maternal complications include a heightened risk of morbidity and mortality. Pregnant women with HFpEF face an increased likelihood of adverse outcomes, including hypertensive disorders, preterm labor, cesarean delivery, and stillbirth. The condition is also associated with fetal complications such as intrauterine growth restriction (IUGR), low birth weight, and developmental delays. These adverse outcomes underscore the severity of HFpEF and its impact on both maternal and fetal health. Research findings indicate that women who receive a prenatal diagnosis of HFpEF are 2.61 to 6.47 times more likely than women who do not have the illness to have complications during pregnancy (5). This increased risk highlights the critical need for early identification and management of HFpEF. Women with HFpEF face higher rates of hypertensive disorders, preterm labor, and cesarean delivery, reflecting the complex interplay between cardiac function and pregnancy-related physiological changes. Furthermore, the increased risk of stillbirth and developmental limitations necessitates close monitoring and proactive management strategies to mitigate these risks.

CONCLUSION

For pregnant women with HFpEF, achieving improved diagnosis, management, and outcomes hinges on a deepened understanding and ongoing research into

this complex condition. Pregnancy-related HFpEF poses distinct difficulties because of the limitations of diagnostic methods and symptom overlap with typical pregnancy-related alterations. This complexity underscores the need for heightened awareness and expertise among healthcare professionals to effectively navigate the intricate interplay between pregnancy physiology and cardiac function. It is imperative to understand the pathophysiology of HFpEF within the context of pregnancy. It helps medical professionals to distinguish between symptoms typical of pregnancy and heart failure signs, allowing for a prompt and precise diagnosis. Research plays a critical role in creating and confirming enhanced diagnostic criteria and treatment procedures specific to this patient population and in clarifying the precise processes by which pregnancy modifies HFpEF.

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