



A Rare case of pregnancy with heart disease at term presenting with pain in the neck Radiating to right upper extremity

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ABSTRACT

Pregnancy complicated by heart disease poses a significant challenge due to the physiological changes that can worsen pre-existing cardiac conditions. We encountered a rare case of a pregnant woman at term who sought medical attention for neck pain radiating to her right upper extremity, which led to the discovery of an underlying heart disease complication. This case highlights the critical need for a multidisciplinary approach involving obstetrics, cardiology, and anesthesia to optimize outcomes for both the mother and fetus in complex pregnancies complicated by underlying heart disease. During pregnancy, the cardiovascular system undergoes significant changes to meet the demands of the developing fetus. These changes include an increase in blood volume, heart rate, and cardiac output, as well as a decrease in systemic vascular resistance. While these adaptations are normal, they can be detrimental to women with underlying heart conditions, such as valvular disease, congenital heart defects, or cardiomyopathy. In our case, the patient's symptoms of neck pain and radiating discomfort were initially concerning for musculoskeletal issues or nerve impingement. However, further evaluation revealed that she had a previously undiagnosed heart condition that was exacerbated by the physiological changes of pregnancy. This emphasizes the importance of maintaining a high index of suspicion for cardiac complications in pregnant women, especially those with known heart disease or risk factors. Managing pregnant women with heart disease requires a collaborative effort between obstetricians, cardiologists, and anesthesiologists. Close monitoring of maternal cardiac function, fetal well-being, and the potential effects of medications and anesthesia is crucial.

1. INTRODUCTION

Despite numerous advancements in maternal healthcare and fertility treatments, the presence of cardiovascular disease can significantly impact pregnancy outcomes. Several heart conditions, including valvular heart disease, chronic hypertension, congenital heart defects, and non-ischemic cardiomyopathies, are associated with heightened risks of morbidity and mortality for both the mother and fetus. Managing these co-existing conditions during pregnancy has proven to be challenging [1]. Given this complexity, a thorough understanding of pregnancy-related cardiovascular diseases can be immensely beneficial in navigating difficult clinical scenarios. Therefore, comprehensive knowledge and updated insights are essential to effectively address the intricate challenges posed by these conditions [2]. In this study we presented rare case of pregnancy with heart disease at term

presenting with pain in the neck Radiating to right upper extremity.

CASE PRESENTATION

The case history pertains to Ms. Imtehana Bibi, a 24-year-old housewife from a low socioeconomic background. Her last menstrual period (LMP) was on March 21, 2023, with an expected due date (EDD) of December 26, 2024. She was admitted on December 14, 2023, at a point of gestation (POG) of 38 weeks and 2 days for her first pregnancy (primi) and 38 weeks and 5 days for her second pregnancy (21 weeks and 6 days). An anomalous scan conducted during her pregnancy showed normal results. However, her hemoglobin (Hb) level was recorded at 7, which is low. The high-performance liquid chromatography (HPLC) test was within normal limits. Additionally, her blood group was identified as B positive. This detailed case history provides essential background information necessary for evaluating Ms. Imtehana Bibi's pregnancy and addressing any associated medical concerns. The chief complaint reported by the patient is experiencing shortness of breath along with right arm pain, which has been persisting for the past month but has notably worsened since yesterday. This combination of symptoms suggests potential

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potential cardiovascular or respiratory issues that require urgent evaluation to determine the underlying cause and provide appropriate medical intervention. The sudden exacerbation of symptoms warrants prompt medical attention to ensure timely and effective management of the patient's condition.

During the first trimester of the current pregnancy, the patient conceived spontaneously, as confirmed by a urine pregnancy test (UPT). However, a dating scan to assess the gestational age was not conducted during this period. The patient diligently took folic acid tablets as recommended. Notably, there was no history of excessive vomiting, fever with rashes, abdominal pain, burning sensation during urination, radiation exposure, or intake of medications that could potentially impact the pregnancy. This concise summary of the history of the present pregnancy provides important details regarding the conception, prenatal care, and absence of notable complications or risk factors during the initial trimester.

In the third trimester of the current pregnancy, the patient continued to perceive fetal movements regularly, indicating ongoing fetal well-being. She maintained her regimen of iron and calcium tablets as prescribed for prenatal supplementation. An obstetrics scan performed during this trimester showed normal results, reassuring for the progress of the pregnancy. The patient did not report any fever, increased frequency, or burning sensation during urination, suggesting the absence of urinary tract infections. Additionally, there were no symptoms of polyuria or polydipsia, with a normal result from an oral glucose tolerance test (OGTT) ruling out gestational diabetes. The patient did not experience any abdominal pain, vaginal leaking, or bleeding during this period. Notably, she gained 10 kilograms in weight during the third trimester, reflecting typical weight gain expected during pregnancy. Overall, the absence of significant symptoms and the positive progress noted in the obstetrics scan contribute to a favorable outlook for the patient's pregnancy in the third trimester.

The patient's menstrual history reveals that she experienced menarche at the age of 13 years. Her menstrual cycles are typically regular, lasting 3 to 4 days with a flow that requires 2 to 3 pads per day. There is no history of passing clots during menstruation. Her last menstrual period (LMP) was on March 21, 2023, providing a crucial reference point for assessing the timing of her current pregnancy. This summary of the menstrual history outlines key details related to the patient's reproductive health and menstrual patterns, contributing important information to her overall medical profile.

The patient's past medical history is notable for the absence of certain conditions and events. There is no history of deep vein thrombosis (DVT) or venous thromboembolism (VTE). Additionally, the patient has not experienced palpitations, cough, or hemoptysis (coughing up blood). There is no history of diabetes mellitus (DM), hypertension (HTN), tuberculosis (TB), epilepsy, asthma, or thyroid disorders. The patient has not undergone any blood transfusions in the past, nor does she have any known drug allergies. Furthermore, there is no histo-

-ry of congenital heart disease. This comprehensive overview of the patient's past medical history helps to rule out various health concerns and provides important context for assessing her current medical status and pregnancy.

The patient's family history does not reveal any instances of bleeding disorders or thrombophilias. There is no history of congenital anomalies within the family, nor is there a family history of twins. Additionally, there are no reported cases of diabetes, hypertension, asthma, tuberculosis (TB), or epilepsy among immediate family members. This summary of the patient's family medical history helps to establish a baseline understanding of potential genetic or familial health factors that may influence the patient's current health and pregnancy.

The patient's personal history indicates a balanced diet with a mixture of food types. Her appetite is reported as normal, and she experiences adequate sleep. Bowel and bladder functions are regular, indicating normal gastrointestinal and urinary patterns. Importantly, there is no history of substance abuse noted. This overview of the patient's personal habits and lifestyle factors provides valuable insight into her overall health and well-being, contributing to a comprehensive understanding of her medical background.

Upon general physical examination, the patient appears to be of moderate build and well-nourished. She is conscious, cooperative, and fully oriented to time, place, and person. Her height is measured at 160 cm, and her weight is 61 kg, resulting in a body mass index (BMI) of 23.8 kg/m², which falls within the normal range. Vital signs are recorded as follows: blood pressure (BP) is 118/76 mmHg, pulse (P) rate is 112 beats per minute (bpm), respiratory rate (RR) is 16 cycles per minute, and she is afebrile with no signs of pallor, jaundice (icterus), cyanosis, lymphadenopathy (enlarged lymph nodes), edema (swelling), or clubbing of the fingers. Examination of the breasts, spine, and thyroid reveals normal findings. This comprehensive physical assessment provides important baseline data on the patient's overall health status and helps guide further evaluation and management of her medical condition.

During the abdominal examination, palpation confirmed the inspection findings. The patient's abdominal girth measured 99 cm, and the fundal height corresponded to 34 weeks of gestational age. Obstetric grips revealed specific findings: a broad, soft irregular mass at the fundal position, a uniform continuous curved resistance on the right lateral side, and multiple knob-like structures suggestive of limbs on the left lateral side. The first pelvic grip detected a hard, ballotable mass indicative of the fetal head, while the second pelvic grip did not show engagement. Auscultation of fetal heart sounds (FHS) was positive, with a rate of approximately 140 beats per minute (bpm). Inspection of the abdomen revealed a globular shape, with a centrally located and everted umbilicus. The linea nigra (dark line down the abdomen) and striae gravidarum (stretch marks) were visible, and there were no scars, sinuses, or dilated veins observed. Hernial orifices were intact. This detailed examination provides crucial information about the pregnancy and fetal position, guiding obstetric

management and care planning for the patient.

During the systemic examination, cardiovascular assessment revealed that the apex beat was located at the 4th intercostal space lateral to the mid-clavicular line, indicating a deviation from the normal position. Cardiomegaly was observed, along with loud heart sounds and splitting of the first heart sound (S1). Blood investigations showed a hemoglobin level of 11.4 g/dL, total leukocyte count of $8.5 \times 10^3/\mu\text{L}$, and platelet count of 2.2 lakh/ μL . Prothrombin time (PT) was 12.9 seconds with an international normalized ratio (INR) of 1.06, and activated partial thromboplastin time (APTT) was 34.9 seconds. D-dimer levels were elevated at 4.71, indicating increased fibrin degradation. The anti-pro B-type natriuretic peptide (NT-proBNP) was also elevated at 3500, and C-reactive protein (CRP) was elevated at 113.

Further investigation with echocardiography (echo) revealed an ejection fraction (EF) of 58% indicating good left ventricular (LV) systolic function. There was dilation of the right atrium (RA) and right ventricle (RV), along with grade 1 diastolic dysfunction of the LV. Significant findings included severe tricuspid regurgitation (TR) and moderate pulmonary arterial hypertension (PAH). The cardiology team recommended treatment with metoprolol 6.25 mg once daily and intravenous lasix 20 mg once daily. The patient was admitted with plans for an elective emergency lower uterine cesarean section (EMLUCS).

Following the cesarean section under general anesthesia, the intraoperative findings revealed successful delivery of the ba-

-by in vertex presentation and the placenta was removed by controlled cord traction (CCT), with the uterus closed in three layers. However, post-operatively, the patient's blood pressure dropped to 80/40 mmHg, pulse rate increased to 115 bpm, and oxygen saturation (SpO₂) was 97%. Despite these initial stable readings, the patient's SpO₂ suddenly began to decline, prompting urgent transfer to the intensive care unit (ITU) for ventilation due to respiratory distress. This comprehensive account highlights critical medical observations and interventions during the management of this complex obstetric case.

Following the postoperative period, the patient received a comprehensive treatment regimen to address potential infections and manage symptoms. This included intravenous ceftriaxone 1 gram twice daily, intravenous metronidazole 100 milligrams three times daily, intravenous gentamicin 80 milligrams twice daily, and intravenous pantoprazole 40 milligrams once daily before meals. Additionally, intravenous ondansetron 8 milligrams was administered three times daily to control nausea and vomiting. To prevent excessive bleeding, intravenous tranexamic acid 500 milligrams was given four times daily. Finally, intravenous paracetamol (PCM) 100 milliliters was administered three times daily for pain relief. This multidrug regimen was carefully tailored to address the patient's specific postoperative needs, aiming to promote recovery and prevent complications following the cesarean section procedure.

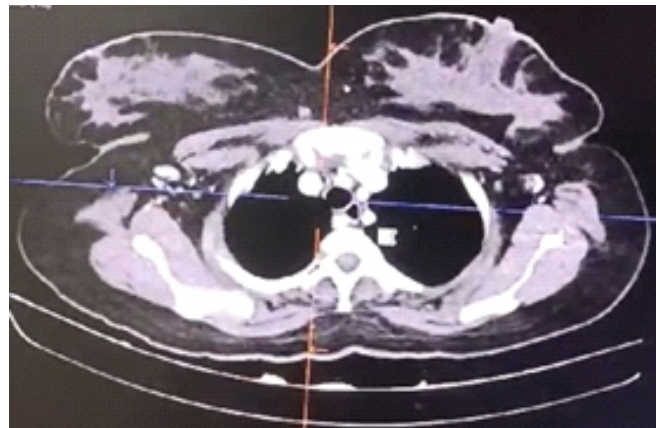
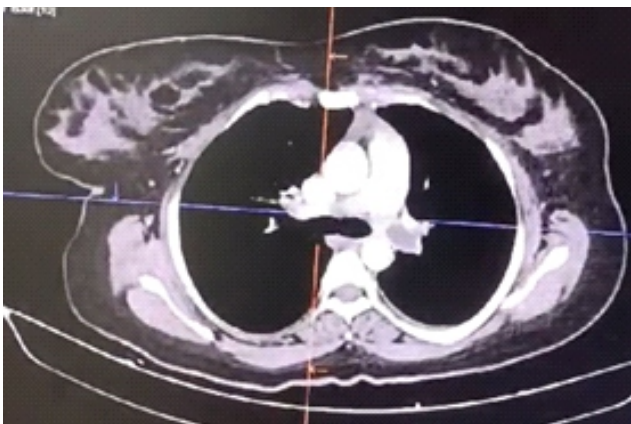


Figure 1: CT pulmonary angiography

The imaging findings reveal significant medical concerns. Diffuse moderate to severe pulmonary thromboembolism is observed, indicating the presence of blood clots within the pulmonary arteries. Additionally, an anomalous origin of the right subclavian artery as a branch of the aortic arch is noted, which is an abnormal vascular anatomy. There is mild enlargement of the right atrium and right ventricle, suggestive of increased strain on the heart due to pulmonary issues. Furthermore, mild subpleural patchy areas of ground glass opacity are seen in both lungs, indicating possible areas of inflammation or injury within the lung tissue. . These findings collectively suggest complex cardiovascular and pulmonary pathology that requires comprehensive evaluation and management to optimize care

and outcomes[8-10].

The treatment plan for pulmonary arterial hypertension (PAH) and thromboembolism, overseen by the cardiology team, involved a specific regimen aimed at managing these conditions effectively. The patient received subcutaneous injections of enoxaparin 60 milligrams twice daily for five days to prevent further clot formation. Additionally, tadalafil 20 milligrams was administered orally once daily for five days to address pulmonary hypertension. By the day of discharge, the patient's oxygen saturation (SpO₂) level was 98% on room air, indicating improved respiratory function. Follow-up laboratory tests showed a significant decrease in D-dimer levels to 0.3, reflecting reduced fibrin degradation associated

with clotting, as well as normalized levels of anti-pro B-type natriuretic peptide (NT-proBNP) at 23 and C-reactive protein (CRP) at 1, indicating a favorable response to treatment. This tailored approach effectively managed the patient's PAH and thromboembolic risk, optimizing outcomes and supporting recovery postoperatively.

CONCLUSION

This study presents a unique case of a pregnant woman at term with an underlying heart disease, manifesting as neck pain radiating to the right upper extremity. The case highlights the complexities and challenges of managing pregnancy complicated by heart disease, emphasizing the need for a multidisciplinary approach involving obstetrics, cardiology, and anesthesia. The patient, a 24-year-old woman from a low socioeconomic background, experienced exacerbated symptoms in the final stages of her pregnancy, necessitating urgent medical intervention. Despite the absence of notable complications or risk factors during the initial trimester, the patient's condition underscores the potential risks associated with cardiovascular disease during pregnancy. The study reaffirms the importance of comprehensive knowledge and updated insights to effectively navigate such intricate clinical scenarios. It also underscores the need for prompt and effective management strategies to optimize maternal and fetal outcomes in complex pregnancies complicated by underlying heart disease. This case serves as a valuable contribution to the existing body of knowledge on pregnancy-related cardiovascular diseases, providing critical insights for healthcare professionals dealing with similar cases. It underscores the importance of early detection, timely intervention, and a multidisciplinary approach in managing such complex cases to ensure optimal outcomes for both mother and fetus.

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