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Case Report: Anaesthetic Considerations for a Pregnant Patient with Rheumatic Heart Disease

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ABSTRACT

Managing cardiac disease during pregnancy presents unique challenges, particularly in women with valvular conditions such as rheumatic heart disease (RHD) and mitral valve prolapse (MVP). This case report discusses a 34-year-old multigravida at 37 weeks with severe mitral regurgitation and mild mitral stenosis secondary to RHD, who underwent an emergency caesarean section under spinal anaesthesia. The surgery proceeded without complications, and the patient was discharged in stable condition. RHD increases the risk of heart failure during pregnancy, necessitating a multidisciplinary approach involving obstetricians, cardiologists, and anaesthesiologists to minimise maternal and foetal risks. MVP, though often well-tolerated in pregnancy, can lead to serious complications in advanced cases, including arrhythmias and infective endocarditis. Prophylactic antibiotics and beta-blockers may be considered in high-risk patients. Neuraxial anaesthesia is commonly used in such cases, with phenylephrine preferred to maintain haemodynamic stability. This case highlights the importance of early diagnosis, tailored anaesthetic strategies, and collaborative care to optimise outcomes for both mother and foetus.

Keywords: *Rheumatic Heart Disease, Pregnancy, Mitral Valve Prolapse, Spinal Anaesthesia, Caesarean Section.*

INTRODUCTION

Managing cardiac disease during pregnancy presents unique challenges, requiring careful coordination between cardiovascular and obstetric teams to ensure the safety of both mother and foetus. The physiological and hemodynamic changes that occur during pregnancy place significant stress on the heart, particularly in women with pre-existing valvular heart disease. This increased demand can lead to serious maternal morbidity and mortality. In India, rheumatic heart disease (RHD) accounts for 40-50% of cardiac complications in pregnant women, highlighting its substantial role in maternal health(1). According to the World Health Organization (WHO), severe mitral and aortic stenosis are classified as high-risk (class IV) conditions in pregnancy. Although the risks associated with moderate forms of these conditions are less well-documented, their management remains complex. Cardiovascular disease (CVD) during pregnancy is becoming increasingly prevalent and now represents a major cause of non-obstetric maternal mortality, with heart disease contributing to 10-15% of maternal deaths(2). This case report discusses the management of a pregnant patient with moderate mitral stenosis, emphasising the challenges and risks posed by RHD in the context of pregnancy.

CASE REPORT

A 34-year-old multigravida (G2A1) at 37 weeks and 4 days of gestation presented with shortness of breath and bilateral pitting pedal oedema. Diagnosed with rheumatic heart disease (RHD) at age six after fever, sore throat, joint pain, and subcutaneous nodules, she had been treated with furosemide and penicillin G but declined valve replacement surgery.

On admission, her vitals were stable: heart rate 80 bpm, blood pressure 116/76 mmHg, respiratory rate 18 breaths/min, and oxygen saturation 96% on room air. Physical exam revealed a systolic murmur and thrill. ECG showed normal sinus rhythm, and echocardiography revealed severe mitral regurgitation (MR), mild mitral stenosis (MS), left atrial dilatation, and a left ventricular ejection fraction (LVEF) of 76%.

Due to non-progression of labour, an emergency lower segment caesarean section (LSCS) was performed. In the operating room, her vitals remained stable (heart rate 82 bpm, blood pressure 120/70 mmHg). Spinal anaesthesia was administered with 1.6 ml of 0.5% bupivacaine and 20 µg fentanyl, achieving a T6 sensory block. Post-delivery, 10 units of oxytocin were given intravenously, and the patient was sedated with 25 µg fentanyl and 1 mg midazolam.

The surgery lasted 40 minutes, with a blood loss of 500 ml and 700 ml of crystalloid administered. To prevent fluid overload, 40 mg of furosemide was given. The patient was transferred to the ICU postoperatively and discharged in stable condition after one week.

DISCUSSION

Managing pregnancy in women with rheumatic heart disease (RHD) requires careful planning and coordination between obstetricians, cardiologists, and anesthesiologists to minimise risks for both the mother and the foetus. RHD increases the risk of heart failure during pregnancy, which can arise from various cardiovascular conditions such as myocardial infarction, cardiomyopathy, valvular defects, congenital malformations, and chronic hypertension(3). In this particular case, heart failure was suspected to be secondary to the patient's pre-existing RHD.

The use of anaesthesia, especially spinal anaesthesia, necessitates close attention to hemodynamic fluctuations, which can be particularly impactful in patients with compromised cardiac function(4). The management of RHD in pregnancy is further complicated by concerns about foetal exposure to drug therapy, ionising radiation from diagnostic procedures, and the potential impact of anaesthesia or cardiopulmonary bypass if surgery is required(5). Given these complexities, multidisciplinary collaboration is essential to optimise outcomes.

RHD presents significant challenges during pregnancy, often resulting in poor maternal and foetal outcomes. Understanding the clinical presentation and management is essential. While mitral valve prolapse (MVP) is usually linked to mitral regurgitation, severe complications arise mainly in advanced cases. Most patients with MVP without other cardiac issues tolerate pregnancy well, but serious complications like arrhythmias, infective endocarditis, and cerebral ischemic events have been reported in some pregnant women with MVP(6).

The role of prophylactic antibiotics and beta-blockers in pregnant women with MVP remains debated(6). Antibiotic prophylaxis is often recommended in patients with murmurs or thickened, redundant valve leaflets on echocardiography to prevent infective endocarditis(7). The decision to use beta-blockers must also consider foetal safety, as these medications can have adverse effects on the developing foetus(8).

Recent studies have highlighted the incidence of MVP in patients with RHD, suggesting a potential link between rheumatic fever and the development of mitral valve prolapse.(9) While non-myxomatous MVP poses little risk during pregnancy, myxomatous changes in the mitral valve are a significant cause of valvular heart disease in women of childbearing age, contributing to severe complications in some cases(6). Surgical intervention may be necessary in patients with MVP who develop more serious complications, particularly when conservative medical management is insufficient.

Neuraxial blockade is frequently used for anaesthesia management in patients with cardiac disease, including RHD and MVP. Data from the Obstetric Association of the UK shows it was used in 73% of cardiac patients for vaginal delivery, with 12% receiving spinal anaesthesia for caesarean sections. Low-dose epidural or combined spinal-epidural (CSE) techniques were used in about 40% of caesarean sections. For pregnant patients with hemodynamic instability, phenylephrine is often the vasopressor of choice as it has minimal impact on uteroplacental perfusion, thereby ensuring safer outcomes for both mother and foetus(10).

CONCLUSION

This case emphasises the importance of a multidisciplinary approach in managing pregnant women with rheumatic heart disease (RHD). Coordination between obstetricians, cardiologists, and anesthesiologists is crucial for individualised care, especially in cases with valvular complications. Tailored anaesthetic strategies and close monitoring are essential for maintaining hemodynamic stability. Early diagnosis and timely interventions, whether medical or surgical, are key to optimising maternal and foetal outcomes.

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