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Life-Threatening Rheumatic Valvular Heart Disease in Late Pregnancy: A Case Report and Literature Review

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Abstract | **Case Report**

Background: Rheumatic heart disease (RHD) continues to pose serious risks during pregnancy, especially in low-resource settings. ***Case summary:*** We report the case of a 44-year-old Moroccan woman at 28 weeks gestation who presented with acute decompensated heart failure due to undiagnosed severe mitral stenosis (valve area 0.4 cm²) and tricuspid regurgitation, secondary to RHD. Clinical evaluation revealed pulmonary hypertension and signs of congestive heart failure. Given the high maternal-fetal risk and lack of percutaneous valvuloplasty facilities, a multidisciplinary team opted for urgent mitral valve replacement and tricuspid valve repair. Postoperative recovery was favorable, with resolution of pulmonary hypertension and stable fetal status. ***Conclusion:*** This case underscores the need for early screening, diagnosis, and a collaborative care approach to mitigate morbidity and mortality in pregnant women with valvular heart disease. It highlights how timely surgical intervention, even during late pregnancy, can improve outcomes when specialized care is accessible.

Keywords: Rheumatic Heart Disease-Mitral Stenosis-Pregnancy Complications-Cardiac Surgery in Pregnancy.

INTRODUCTION

Rheumatic heart disease (RHD) remains a significant cause of cardiovascular complications in pregnancy, particularly in developing regions. We present a case of severe mitral stenosis due to RHD diagnosed in the third trimester at the University Hospital Mohammed VI of Marrakech.

CASE PRESENTATION

A 44-year-old Moroccan woman, gravida 2 para 1 (G2P1), at 28 weeks and 5 days of gestation, presented with acute onset of shortness of breath, chest discomfort, bilateral lower extremity swelling, and palpitations. She reported a questionable history of recurrent pharyngitis during adolescence, which was inadequately treated. She denied any previous diagnosis of rheumatic fever or heart disease.

On admission, her vital signs were:

- Blood pressure: 93/54 mmHg
- Heart rate: 120 beats per minute (regular tachycardia)
- Respiratory rate: 24 breaths per minute
- Oxygen saturation: 89% on room air

Physical examination revealed jugular venous distension, hyperpulsatile carotid pulse, and a diastolic murmur best heard at the mitral valve, radiating to the left axillary line. A systolic murmur indicative of high pulmonary output was also noted. Pulmonary auscultation revealed bilateral crepitations. Radial pulses were palpable, with pedal edema present.

Investigations:

A 12-lead electrocardiogram (ECG) showed sinus tachycardia and left atrial enlargement without additional anomalies. Transthoracic echocardiography demonstrated:

- Ejection fraction: 60%
- Mildly enlarged left atrium (Fig-2)
- Non-dilated right atrium and right ventricle with preserved systolic function
- Severe mitral stenosis with a mean gradient of 53 mmHg (possibly overestimated due to tachycardia and pregnancy) Mitral valve area: 0.4 cm² (by planimetry), Moderate mitral regurgitation (Fig-1, Fig-3)
- Severe tricuspid regurgitation (vena contracta 9 mm, systolic regurgitant orifice 51 mm²)
- Pulmonary hypertension with a pressure of 101 mmHg

- Dilated, non-compliant inferior vena cava
- Normal aortic and pulmonary valves.

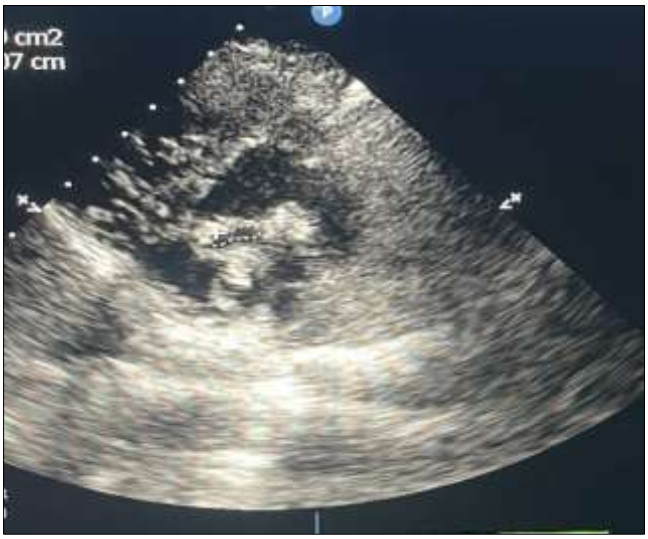

Fig. 1: Transthoracic echocardiography image showing mitral stenosis measured by planimetry

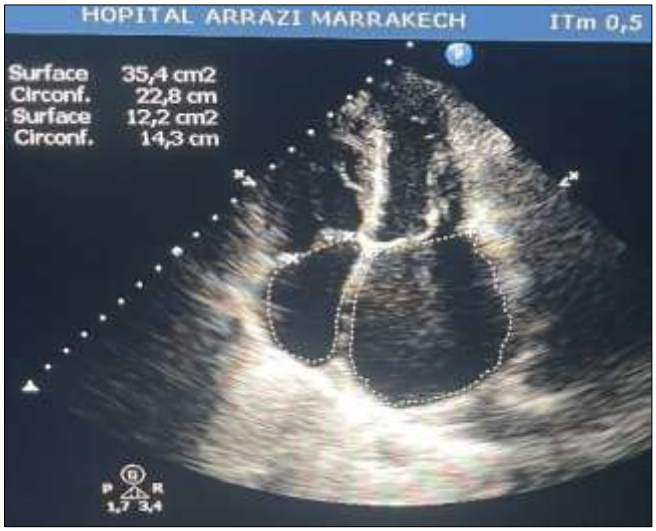

Fig. 2: Transthoracic echocardiography; 4 chamber view showing enlarged left atrium

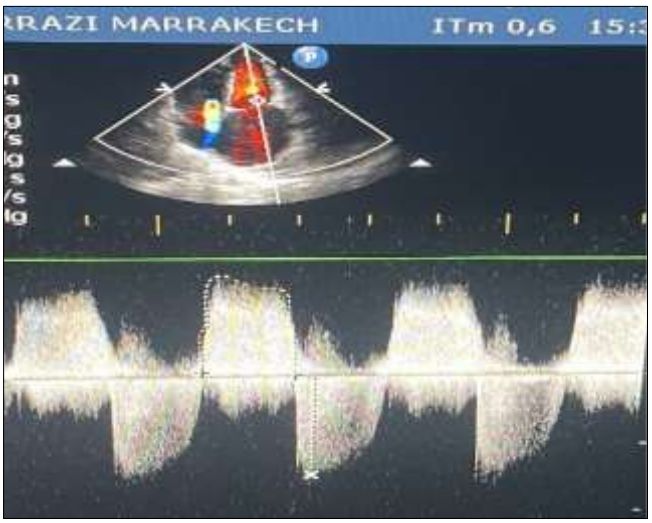

Fig. 3: Transthoracic echocardiography; 4 chamber view showing Severe mitral stenosis with a high gradient of 53 mmHg and moderate mitral regurgitation

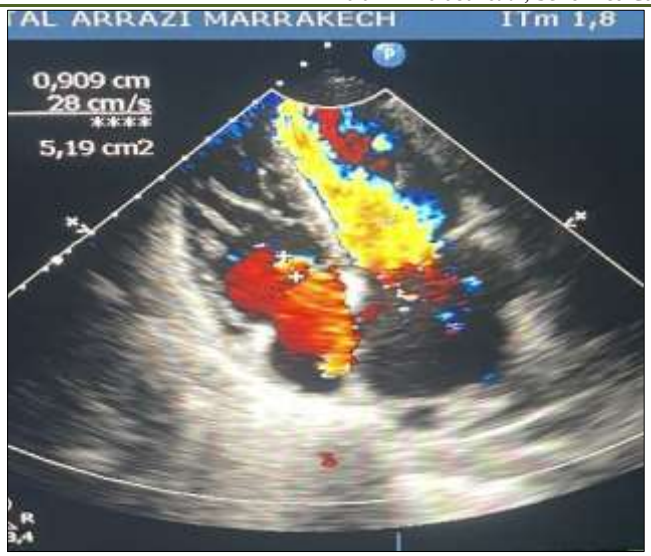

Fig. 4: Transthoracic echocardiography; 4 chamber view showing Severe tricuspid regurgitation (vena contracta 9 mm, systolic regurgitant orifice 51 mm²)

A chest X-ray indicated pulmonary edema. Laboratory results revealed mild anemia (Hb: 10.7 g/dL), a positive urine culture, normal troponin levels, normal thyroid function.

Management and Outcome:

A multidisciplinary team, including specialists in obstetrics, cardiology, and cardiac surgery, concluded that the patient's cardiovascular status was likely to deteriorate further. The ongoing pregnancy posed a high risk of severe maternal and fetal morbidity and mortality if the stenotic valve was not promptly addressed. Due to the unavailability of valvuloplasty facilities at our hospital, the decision was made to proceed with mitral valve replacement using a mechanical prosthesis and tricuspid valve repair (Wilkins score = 9).

The patient was initially managed in the intensive care unit for stabilization. After six days, she was transferred to the cardiovascular surgery department, where she underwent successful mitral valve replacement and tricuspid plasty. Postoperative fetal monitoring showed no signs of distress, and the patient remained asymptomatic with stable vital signs.

A transthoracic echocardiogram performed on postoperative day 21 demonstrated:

- Well-functioning mechanical mitral prosthesis (mean gradient: 3.8 mmHg, non-stenotic)
- Properly functioning tricuspid valve repair
- Left ventricular ejection fraction of 51%
- Resolution of pulmonary hypertension
- Non-dilated inferior vena cava

The patient was discharged in stable condition and transferred to high-risk obstetrics clinic at 32 weeks and 5 days of gestation for continued monitoring.

DISCUSSION

Rheumatic heart disease (RHD), although significantly reduced in high-income countries due to effective diagnosis and treatment of streptococcal infections, remains a major contributor to maternal morbidity and mortality in low-resource settings. In such countries, RHD accounts for up to 90% of cardiovascular disease during pregnancy [1]. However, increased migration from endemic regions has led to a resurgence of RHD-related complications in pregnancy even in developed nations [2].

RHD typically develops as a sequela of acute rheumatic fever, where cross-reactive antibodies target host tissues, including cardiac valves. This immunologic mechanism results in progressive fibrosis and scarring, most notably affecting the mitral valve and leading to mitral stenosis (MS), the most common valvular lesion in RHD [3]. MS is particularly hazardous during pregnancy due to the hemodynamic changes that increase cardiac output and heart rate, leading to elevated left atrial pressure and risk of pulmonary edema and atrial fibrillation. Even previously asymptomatic women may decompensate under these physiological stresses, particularly in the presence of anemia, infection, or fever [3].

Our case aligns with the literature, involving a patient with severe rheumatic mitral stenosis and severe tricuspid regurgitation, both discovered incidentally following decompensated heart failure in the third trimester.

The severity of MS is strongly associated with adverse maternal outcomes, including congestive heart failure, arrhythmias, and maternal death, and correlates with increased fetal risks such as intrauterine growth restriction (IUGR), preterm delivery, and stillbirth [4, 5]. The postpartum period poses additional risks due to

autotransfusion and fluid shifts that further increase cardiac workload. For this reason, close monitoring throughout pregnancy and the puerperium is essential, especially in patients with moderate to severe MS.

Direct planimetry remains the most reliable method for evaluating mitral valve area (MVA) during pregnancy, although mean transvalvular gradient correlates better with symptom severity under dynamic hemodynamic conditions [6]. Clinical guidelines, including the ESC and ACOG recommendations, classify women with severe MS as WHO Class IV risk, for whom pregnancy is contraindicated due to a maternal cardiac event rate exceeding 27% [7].

Management strategies depend on the severity of stenosis and symptomatology. Medical therapy with beta-blockers, diuretics, and sometimes anticoagulation is the first-line approach. When medical therapy fails, percutaneous balloon mitral valvotomy (PBMV) is the preferred intervention if suitable valve anatomy exists. Several studies confirm its efficacy and safety during pregnancy, especially when radiation exposure is minimized using shielding techniques [8, 9].

In our setting, due to the unavailability of PBMV and a Wilkins score of 9, our patient underwent mitral valve replacement surgery with a mechanical prosthesis at 29 weeks' gestation. This decision reflects real-world constraints in resource-limited environments, where timely access to catheter-based interventions is often not feasible. Although cardiopulmonary bypass during pregnancy carries some fetal risk, maternal surgery may be life-saving. Literature indicates no consistent relationship between gestational age and fetal risk from bypass, though earlier intervention may improve maternal stability [10]. Delivery planning, including the option of cesarean section, must be individualized based on cardiac status and fetal viability.

Tricuspid regurgitation (TR), often secondary to pulmonary hypertension or right ventricular pressure overload, typically remains clinically insignificant unless accompanied by significant right heart dysfunction or associated anomalies, such as Ebstein's anomaly. In our patient, severe functional TR was associated with mitral valve pathology and contributed to the clinical picture.

In Conclusion

This case underscores the importance of early diagnosis, multidisciplinary management, and individualized care planning in pregnant patients with rheumatic mitral stenosis. Where PBMV is unavailable or contraindicated, timely surgical intervention can be a life-saving alternative, albeit with significant maternal and fetal considerations.

Conflicts of Interest: The authors declare no conflict of interest.

Contributions of the Authors

All authors contributed to the conduct of this research work. All authors have read and approved the final version of the manuscript.

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