



## Clinical Case

## Severe Rheumatic Mitral Stenosis in the Postpartum: A Case Report

*Sténose mitrale rhumatismale sévère en post-partum : À propos d'un cas*

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### RÉSUMÉ

Les cardiopathies valvulaires, notamment rhumatismales, représentent la première cause de cardiopathies entraînant des complications pendant la grossesse dans les pays en développement. Nous rapportons le cas d'une patiente de 37 ans, enceinte de 33 semaines, hospitalisée pour souffrance fœtale avec indication à une césarienne. Elle présente un jour plus tard, une détresse respiratoire pour laquelle les examens cliniques et paracliniques révèlent un œdème aigu pulmonaire sur rétrécissement mitral serré d'allure rhumatismale avec indication chirurgicale par remplacement valvulaire mitrale. La patiente n'a pas bénéficié d'intervention chirurgicale indiquée, l'évolution défavorable par décompensation cardiaque a conduit au décès quinze jours après la césarienne.

### ABSTRACT

Valvular heart diseases, particularly rheumatic valve disease, are the leading cause of heart disease causing complications in pregnancy in developing countries. We report the case of a 37-year-old multiparous patient, 33 weeks pregnant, hospitalized for foetal distress with indication for an emergency caesarean. One day later, she got into with respiratory distress for which clinical and paraclinical examinations suggested an acute pulmonary oedema on a rheumatic severe mitral stenosis with surgical indication of mitral valve replacement. The patient did not have this surgical intervention and the unfavourable evolution by cardiac decompensation led to death fifteen days after caesarean section.

### INTRODUCTION

Valvular heart disease is the leading cause of pregnancy-related complications in developing countries. In pregnant women valvular disease is associated with a variable risk of mortality depending on the nature and severity of the disease. This risk also depends on the quality of management. The tolerance of valve disease to the physiological hemodynamic changes of pregnancy differs between regurgitant and stenosing valve disease (1)(2). Rheumatic heart disease remains by far the most common heart disease encountered during pregnancy in developing countries, while degenerative aetiologies are the most common in Western countries (3)(4). The lack of diagnosis of rheumatic fever is generally related to socio-economic reasons and the almost non-existent health coverage. The diagnosis is usually made after a complication related to the disease.

Physiological changes in hemodynamic during pregnancy, in particular increased heart rate, blood volume, cardiac output and reduced systemic arterial

resistance, are the main factors that can decompensate underlying heart disease (4). Vaginal delivery represents an additional hemodynamic stress, as cardiac output may double during uterine contractions. These changes can be mitigated with epidural analgesia and caesarean section. Stenosing valve diseases such as mitral stenosis, which are asymptomatic for a long time, are poorly tolerated in pregnancy compared to regurgitant valve diseases. This intolerance is caused by the increase in cardiac output, the shortening of diastole due to physiological tachycardia. All these phenomena lead to a significant increase in the trans-mitral gradient and upstream pressures (5). The presence of left heart obstruction is an independent predictor of maternal cardiac complications (6). The management of these patients has been challenging in our setting in the absence of a prompt surgical therapy. We report the case of a patient with unknown cardiovascular history, who presented with a late diagnosis of severe rheumatic mitral stenosis in postpartum.

## CASE REPORT

The 37-year-old multiparous patient, 33 weeks pregnant with amenorrhea, was relatively asymptomatic until she was hospitalized in the National Social Insurance Fund Hospital for foetal distress with indication of an emergency caesarean section on a scarred uterus without surgical complications. She presented 24 hours postoperatively with acute respiratory distress for which she was admitted to the intensive care unit (ICU) for better management. On admission to the ICU, physical examination showed blood pressure of 88/56 mmHg, tachycardia with heart rate of 121 bpm, signs of desaturation characterised by perioral and extremity cyanosis with SpO<sub>2</sub> at 80% on room air. It was recorded a 3/6 diastolic murmur with peak at the ventricular apex, a reduction of the vesicular murmur at the pulmonary bases bilaterally with diffuse crepitus rales. Painful hepatomegaly associated with hepato-jugular reflux, turgidity of the jugular veins and oedema of the lower limbs in the shape of a sock taking the bucket.

Para-clinical examinations were done including a chest x-ray who showed a bilateral alveolar-interstitial infiltrate, a small bilateral pleural effusion and significant cardiomegaly with ICT > 0.5, an electrocardiogram who showed sinus tachycardia with nonspecific repolarization disorders, biphasic P waves in V1 and V2 (Figure 1) and a trans-thoracic cardiac ultrasound revealed thickening of the calcified and fused mitral leaflets causing a rheumatic-like tight mitral stenosis with an area of 1.02 cm<sup>2</sup>, a mean trans-valvular gradient 31.3 mmHg, severe dilatation of the left atrium with a surface area of 32.16 cm<sup>2</sup> (figure 2 and 3), a reduced ejection fraction of 48%, dilatation of the right cavities with moderate tricuspid valve insufficiency, pulmonary arterial hypertension at 79.6 mmHg and a small pericardial effusion and bilateral pleurisy (figure 3 and 4). All these examinations revealed an acute pulmonary oedema (APE) on rheumatic-like severe mitral stenosis with surgical indication by mitral valve replacement. She was placed on combined treatment (furosemide 80 mg twice daily, isosorbide dinitrate 10 mg 3 times a day, digoxin 0.25 mg once daily), venous thromboembolic disease prophylaxis with subcutaneous enoxaparin 0.4 ml, oxygen therapy (O<sub>2</sub>) at 6l/min) and addressed to the Cardiac Centre of Saint Elisabeth Hospital of Shisong for a surgical management. Unfortunately, the clinical conditions deteriorate while preparing for surgical intervention and lead to death following acute cardiac decompensation.

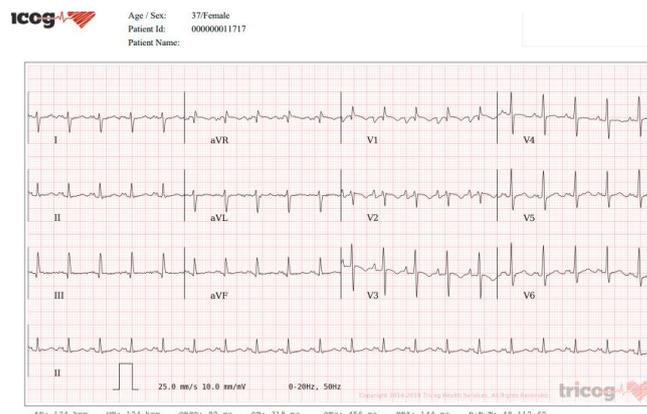


Figure 1: ECG shows sinus tachycardia at 124 bpm.

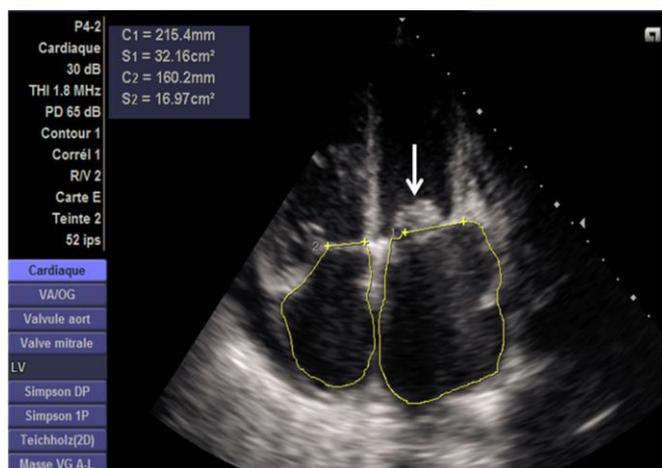


Figure 2: Apical 4-cavity view showing mitral valve remodelling with fusion and calcification and leaflet fusion, dilatation of the atria.

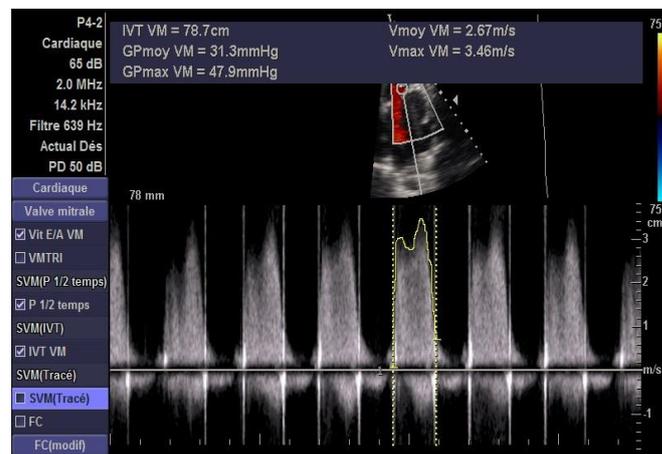


Figure 3: Continuous Doppler over the mitral valve with a mean trans-valvular gradient of 31.3 mmHg.

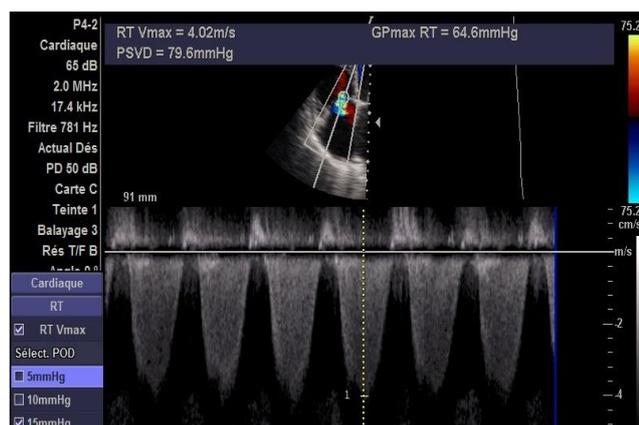


Figure 4: Continuous Doppler over the tricuspid valve showing pulmonary hypertension 79.6 mmHg.

## DISCUSSION

The literature review shows that rheumatic mitral stenosis is the dominant valve disease in pregnancy, which tends to worsen due to hemodynamic changes that make patients symptomatic despite therapeutic adjustment. In some cases, surgical intervention or percutaneous mitral commissurotomy minimises the risk of complications (2)(7).

In our case, the multiparous patient was asymptomatic during the 33 weeks of amenorrhoea despite her tight mitral stenosis and the hemodynamic changes present during pregnancy. Her postpartum diagnosis followed a hemodynamic decompensation with APE.

Rheumatic heart disease remains highly prevalent in developing countries (8). In various cases, despite the severity, many patients remain symptom-free with a first manifestation at 10 years of the rheumatic fever episode (9).

Given the unavailability of technical facilities for optimal management of heart disease during pregnancy, decompensated by physiological changes and peripartum, in pregnant patients a careful search for signs and symptoms should be systematic. A cardiological consultation, a cardiac ultrasound for suspected cases. Pregnancy in patients with known valvular heart disease should ideally be planned to optimise clinical and hemodynamic status prior to conception. In order to avoid potentially fatal complications, the management of acute cardiac decompensation should be multidisciplinary, involving the obstetrician-gynaecologist, cardiologist, cardiac surgeon and anaesthetist-resuscitator, and in some cases interventional or even surgical techniques may be required.

## CONCLUSION

Valvular heart disease, especially rheumatic valve disease, represents an important cause of complications during pregnancy and the peripartum. In this clinical case, the diagnosis is made postpartum with a tragic end for the patient due to lack of adequate technical facilities. In all pregnant women, a search for signs and symptoms of heart disease should be systematic during prenatal

visits. For the best management, women with known valve disease should plan their conception to optimize their clinical and hemodynamic status. In case of cardiac decompensation, multidisciplinary follow-up is required.

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