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Well-Tolerated Atrial Fibrillation Via a Wolff-Parkinson-White Accessory Pathway in a Pregnant Woman at 32 Weeks' Gestation: A Case Report from the Libreville University Hospital Center (CHUL)

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Abstract

Introduction: *The physiological state of pregnancy causes changes to the autonomic nervous system which can lead to serious complications such as the onset of a cardiac arrhythmia. This arrhythmia can be potentially harmful to both the mother and the foetus. This arrhythmic event is all the more common when there is a contributing factor such as the presence of an accessory pathway. We report the case of a 28-year-old patient, 32 weeks pregnant, who was admitted to our department with poorly tolerated atrial fibrillation presenting with Wolff-Parkinson-White syndrome.*

Clinical Presentation: *This is a 28-year-old woman, 32 weeks pregnant, admitted for palpitations. Physical examination revealed a blood pressure (BP) of 80/55 mmHg and a heart rate of 203 beats per minute. An electrocardiogram revealed a fine QRS tachycardia at 280 beats per minute, suggesting atrial fibrillation. A diagnosis of cardiac arrest was performed, leading to the delivery of an external electrical shock at 200 joules, which restored sinus rhythm with a heart rate of 98 beats per minute; a P-R interval of 10/100s and a widening of the ascending limb of the QRS complex were noted. The patient was started on labetalol 200 mg once daily.*

Conclusion: *Atrial fibrillation is the most common arrhythmia, particularly when it occurs in a patient with an accessory pathway. This arrhythmia poses a real problem-prognosis depending on its clinical presentation in a pregnant woman, as it may be life-threatening for both the mother and the foetus.*

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Introduction

Physiological changes associated with pregnancy can give rise to serious manifestations, such as the onset of a cardiac arrhythmia, which may be potentially harmful to both the mother and the fetus. Atrial fibrillation is the most frequently triggered arrhythmia during pregnancy [1]. The occurrence of this arrhythmia involves several factors, including significant hormonal influence or the involvement of the autonomic nervous system. This arrhythmia may serve as a clinical indicator of a pre-excitation syndrome, specifically the Wolff-Parkinson-White (WPW) pattern [2]. The onset of such an arrhythmia involving a pre-excitation pathway in a pregnant woman can lead to various complications—most notably the triggering of severe ventricular arrhythmias—resulting in hemodynamic compromise that would be detrimental to both the mother and the fetus. Management must be holistic, involving close collaboration between the cardiologist and the gynecologist. The choice of antiarrhythmic agents must take into account both the pregnancy itself and the potential for hemodynamic complications. Electrical cardioversion is indicated only in cases presenting as a cardiac rhythm emergency that jeopardizes the maternal and fetal prognosis [3]. We report the case of a 28-year-old patient, 32 weeks into her pregnancy, who was admitted for atrial fibrillation occurring in the context of a Wolff-Parkinson-White pre-excitation pattern.

Case Report

The patient is a 28-year-old woman with no significant medical history, currently 32 weeks pregnant. She was admitted for the sudden onset of palpitations, accompanied by profuse sweating and asthenia. Physical examination revealed a blood pressure (BP) of 80/55 mmHg and a heart rate of 203 beats per minute; oxygen saturation on room air was 89%, and there were no signs of left-sided heart failure. Given this clinical presentation, an electrocardiogram (ECG) recording demonstrated a narrow-complex tachycardia at 280 beats per minute with an absence of P waves, raising suspicion of atrial fibrillation (Figure 1). A diagnosis of rhythm-related circulatory collapse was established, prompting the administration of external electrical cardioversion at 200 joules, which successfully restored sinus rhythm with a heart rate of 98 beats per minute. The post-cardioversion ECG recording showed a PR interval of 0.10 seconds with slurring of the ascending limb of the QRS complex, suggestive of pre-excitation consistent with Wolff-Parkinson-White syndrome (Figure 2). A consultation with the obstetrics and gynecology department was arranged to assess fetal viability. A cardiac Doppler ultrasound was performed, revealing a heart of normal morphology with preserved left ventricular systolic function (Figure 3). Laboratory investigations, including a complete blood count, showed a hemoglobin level of 12 g/dL and a serum potassium level of 4.2 mEq/L; thyroid function tests were normal. The treatment administered following the external electrical cardioversion consisted of labetalol (200 mg, 1 tablet daily) and a subcutaneous dose of 0.8 mL of enoxaparin. The patient's clinical course was uneventful, with no subsequent episodes of palpitations or dizziness. The patient was discharged from the hospital on a treatment regimen consisting of labetalol (200 mg, 1 tablet daily) and a Vitamin K antagonist (4 mg, ½ tablet daily). The patient returned home with an indication for ablation of the accessory pathway after delivery.

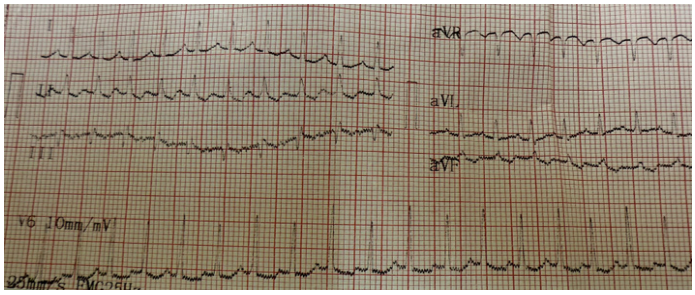

Figure 1: Atrial Fibrillation at 280 Cycles/Minute.

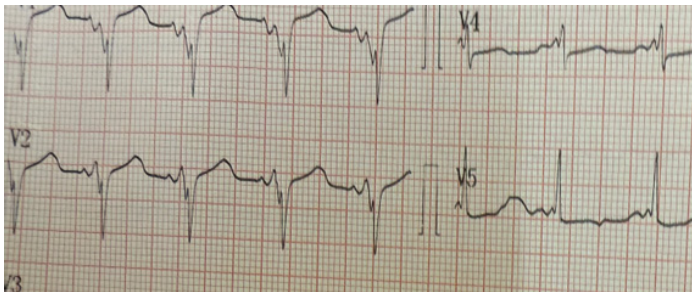

Figure 2: Sinus Rhythm at 98 Beats Per Minute; Note a Short P-R Interval.

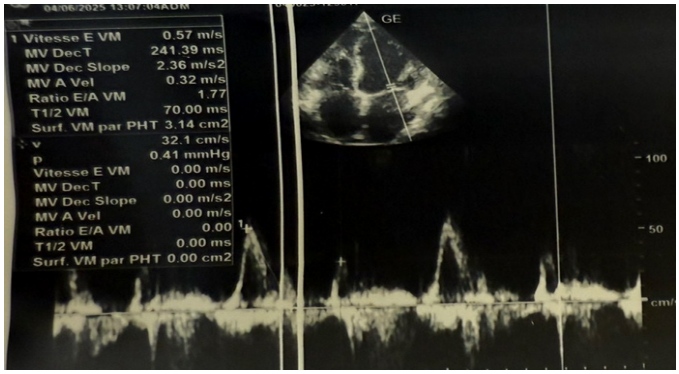

Figure 3: Normal Cardiac Doppler Ultrasound.

Discussion

Conduction pathway abnormalities or the presence of an accessory pathway in young pregnant women are, in most cases, triggered by the progression of the pregnancy. Atrial fibrillation is sometimes the initial rhythm disturbance presenting in the context of Wolff-Parkinson-White (WPW) syndrome [4]. This physiological state of the woman renders the management of the rhythm disturbance somewhat challenging. The electrophysiological properties of the atrioventricular node allow for 1:1 conduction at atrial rates lower than those seen in atrial fibrillation [5]. In the event of rapid atrial fibrillation, a 2:1 atrioventricular conduction block typically ensues, thereby preventing the transmission of the rhythm disturbance to the ventricles. In our case, the wide appearance of the QRS complexes on the electrocardiogram recorded during the episode indicates that ventricular depolarization occurred predominantly via the accessory pathway, thereby accounting for the rapid ventricular response. Flecainide has been described as an antiarrhythmic agent capable of preventing malignant arrhythmias associated with Wolff-Parkinson-White (WPW) syndrome, without resulting in any fetal or maternal complications. In our case, the onset of atrial fibrillation—presenting as the initial rhythm disturbance—combined with signs of hemodynamic instability, necessitated the use of an external defibrillator, which successfully restored sinus rhythm. Antidromic reentrant tachycardia is one of the most frequent complications associated with rhythm disturbances involving an accessory pathway, occurring in 0.1–0.3% of cases [6]. The occurrence of such malignant rhythm disturbances may be linked to the patient's young age, the presence of multiple accessory pathways, a short refractory period of the accessory pathway (less than 240 ms), or short pre-excited RR intervals (less than 250 ms). The use of Flecainide prolongs the effective refractory period of the sinoatrial and atrioventricular nodes, and exerts more significant electrophysiological effects on accessory pathways [7]. The occurrence of a cardiac arrhythmia in a pregnant woman presents a significant challenge, as it jeopardizes the maternal prognosis—primarily through a reduction in maternal cardiac output—which can lead to fetal growth restriction. In this context, the use of Flecainide is considered relatively safe for the fetus and is, in fact, indicated for the treatment of fetal arrhythmias [8,9]. The management of a paroxysmal episode of atrial fibrillation associated with an accessory pathway requires the use of specific antiarrhythmic agents or electrical cardioversion, depending on the patient's hemodynamic stability.

In our case, following external electrical cardioversion, the patient was initiated on Labetalol 200 mg/day due to the unavailability of Flecainide in local pharmacies; notably, we observed no complications or recurrence of arrhythmias while the patient was on Labetalol 200 mg (one tablet daily). We proposed ablation of the accessory pathway to the patient following delivery, as this procedure exposes both the pregnant woman and the fetus to potentially harmful radiation. Complication rates associated with the ablation technique can approach 3% [10]. Ablation of the accessory pathway is considered the gold standard treatment, achieving a complete cure in over 90% of cases [11]. As ablation therapy is not available in our local setting, the patient will require medical transfer to another facility; in the interim, she will continue to take Labetalol while awaiting the ablation procedure.

Conclusion

Atrial fibrillation is the most common cardiac arrhythmia, particularly when it occurs in patients harboring an accessory pathway. Depending on its clinical presentation in a pregnant woman, this rhythm disorder poses a significant prognostic challenge, as it may jeopardize the lives of both the mother and the fetus, thereby necessitating a multidisciplinary approach to care. It is crucial for our healthcare facilities to have access to all the various classes of antiarrhythmic drugs required for this management. The unavailability of electrophysiological studies and ablative techniques exposes the State to additional costs associated with medical evacuations and long-term antiarrhythmic therapy.

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