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Case Report

Wolff-Parkinson-White Syndrome during Pregnancy, What Risk and What Management: About 03 Cases with Literature Review

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Abstract

Wolff-Parkinson-White (WPW) syndrome is a relatively rare cardiac rhythm disorder entity encountered during pregnancy. However, its exacerbation under this physiological condition could be responsible, in certain cases, for life-threatening arrhythmias compromising both maternal and foetal prognosis. We report the observations of 03 pregnant women, without past medical history, presenting to the emergency room for palpitations related to a Wolff-Parkinson-White syndrome, complicated in one case with foetal death. The substantial severity of the WPW syndrome during pregnancy requires a prompt and adequate management strategy, based on a multidisciplinary cooperation between obstetricians, cardiologists and neonatologists.

Keywords: Wolff-Parkinson-White syndrome, pregnancy, cardia arrhythmias, radiation exposer.

INTRODUCTION

Wolff-Parkinson-White syndrome is defined by the association of a short PR interval, a widening of the initial part of the QRS called "delta wave" and the presence of paroxysmal tachycardia. The prevalence of the WPW syndrome is 0.2-4.5/1000 in the general population. The risk of sudden death is rare less than 1% but real. during pregnancy arrhythmias related to WPW syndrome can threatens both maternal and foetal prognosis. Usually pregnancy triggers or aggravates arrhythmias related to accessory pathways [1]. Only an immediate and multidisciplinary management can guarantee a normal course of the pregnancy and delivery.

OBSERVATIONS

Case N° 1

A 22-year-old woman, 20 weeks pregnant, with no past medical history of palpitation, presented to the emergency room for well-tolerated repetitive palpitations with sudden onset and termination, her initial ECG at admission showed a supra-ventricular tachycardia with short RP' interval suggesting an atrioventricular re-entrant tachycardia (Fig 1), a carotid sinus massage resulted in tachycardia termination, the ECG in sinus rhythm showed a left lateral accessory pathway, the patient was given B-blockers to control the tachycardia with a good response allowing the postponement of the ablation procedure of the accessory pathway after the childbirth (Fig 2).

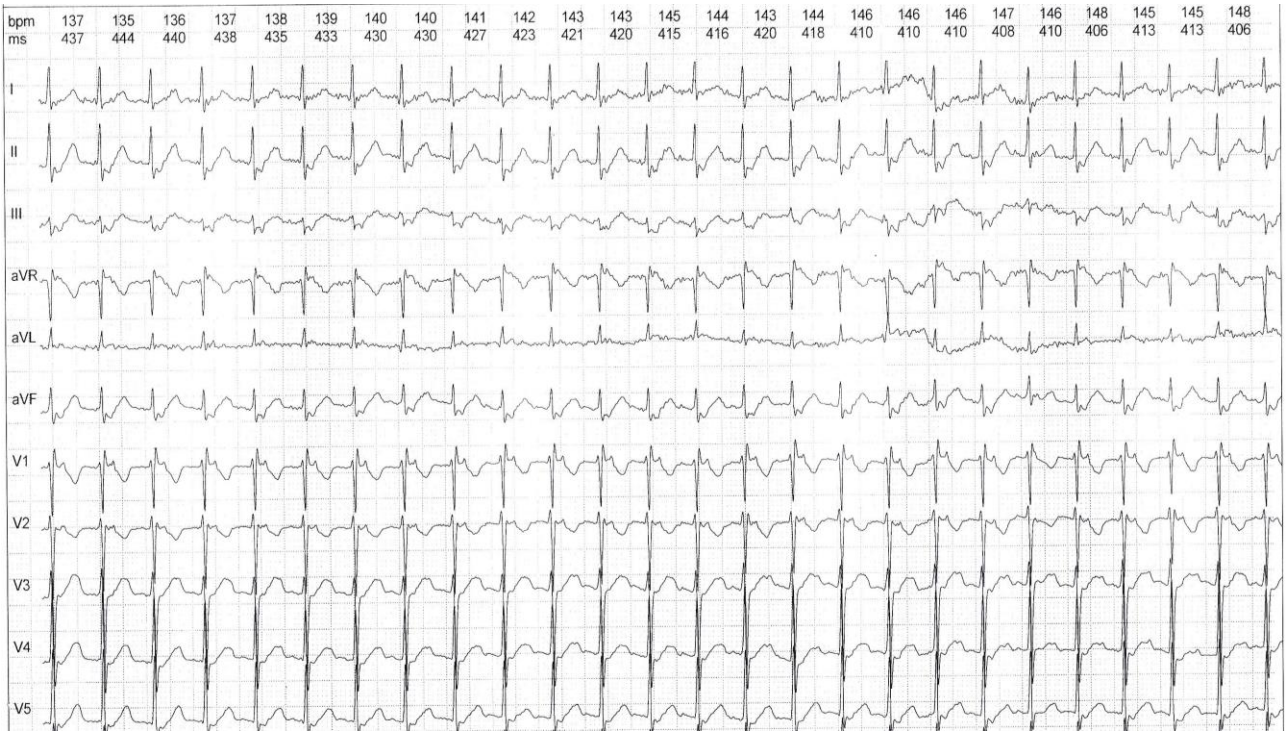

Figure 1: Supraventricular tachycardia suggesting an atrioventricular reentrant tachycardia

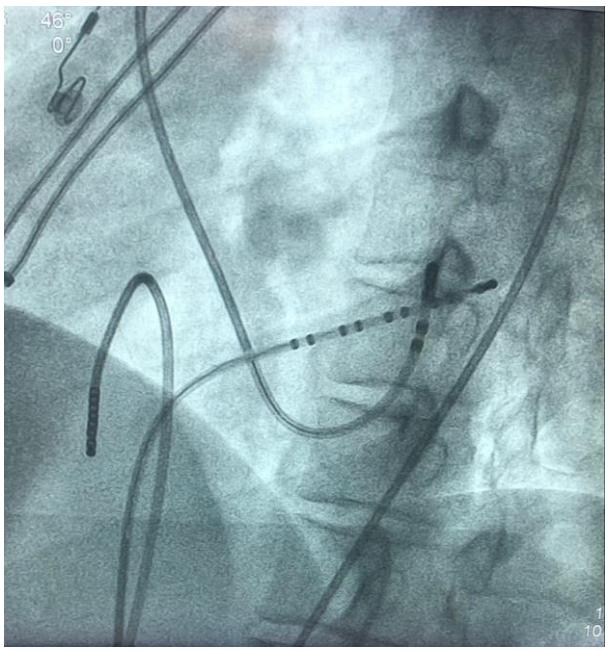

Figure 2: Ablation of the left lateral accessory pathway after childbirth: catheter ablation placed in the lateral region of the mitral annulus through retro aortic access

Case N° 2

A 30-year-old woman, pregnant at 28 weeks, known for having an asymptomatic accessory pathway was admitted to the emergency room for haemodynamically well tolerated but disabling palpitations related to its right postero-septal accessory pathway, she was placed on B-blocker initially without improvement replaced by Flecainide with good response. Radiofrequency ablation of her left accessory pathway was delayed after delivery.

Case N° 3

A 26-year-old pregnant woman, with no past medical history, was experiencing during her pregnancy frequent palpitations initially neglected by the patient. At the 36th week of pregnancy, she consulted for a long lasting episode of palpitation related to a rapid

supraventricular tachycardia with signs of hemodynamic compromise, an external electric shock was delivered immediately allowing the restoration of a sinus rhythm with a pre-excitation located in the antero-septal region of the tricuspid annulus (Fig 3). An obstetric ultrasound performed just after delivering the shock has shown an intrauterine foetal death. The patient was initially put on antiarrhythmic treatment, and ablation of the right postero-septal accessory pathway was performed remotely.

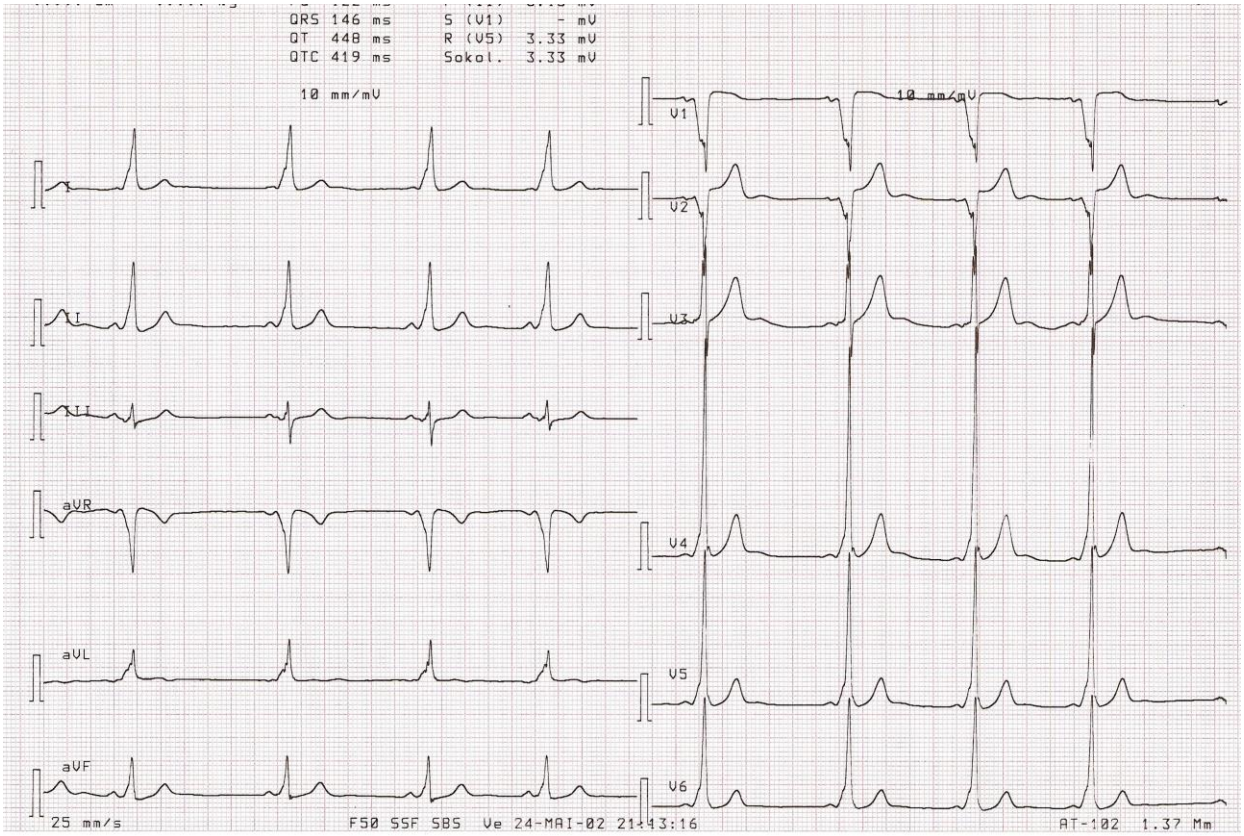

Figure 3: ECG in sinus rhythm after tachycardia termination showing an anteroseptal accessory pathway

DISCUSSION

Wollf-Parkinson-White syndrome has been known for more than a century. Its first description dates back to 1893 by Kent. it is the manifestation of to the presence of one or more anterograde conducting atrioventricular accessory pathways bypassing the normal conduction system of the heart. The presence of this muscular connection between the atria and the ventricles is responsible for a ventricular pre-excitation resulting in a widening of the initial part of the QRS (delta wave), the creation of a re-entry circuit between the accessory pathway and the normal pathway leading to orthodromic or antidromic atrioventricular nodal re-entrant tachycardia, finally it exposes to the risk of sudden death by ventricular fibrillation during episodes of atrial fibrillation rapidly conducted to the ventricles via the accessory pathway. Clinically, this syndrome is defined by the association of a short PR interval, the presence of a "delta wave" and paroxysmal tachycardia attacks. During pregnancy, there is an increase in cardiac output of 30-50% [2]. Heart rate increases by 10 to 20 beats, resulting in shorter refractory periods and faster conduction velocities. Oestrogens increase myocardial excitability by increasing sensitivity to catecholamines [3, 4]. In general, pregnancy exposes to the emergence of arrhythmias, particularly in patients with arrhythmogenic substrate such as WPW syndrome [2, 5].

More than half of patients are asymptomatic before pregnancy. During pregnancy, they frequently present to the emergency room for palpitations, dyspnoea or dizziness. The electrocardiogram confirms the diagnosis. Tachycardias in WPW syndrome can be responsible for hemodynamic instability with a risk of sudden death for both the mother and the foetus [6].

The therapeutic choice for WPW syndrome in the setting of pregnancy depends on the tolerance of the arrhythmia, the presence of an underlying heart disease and the effect of antiarrhythmic treatment. All anti-arrhythmic drugs should be considered potentially toxic to the foetus and one should take into account the risk-benefit ratio before indicating any treatment. In all cases however it is necessary to reassure the patient, to insist on lifestyle and dietary measures and to advise left lateral decubitus. In hemodynamically stable patients, vagal manoeuvres can be attempted, if unsuccessful intravenous adenosine remains the first

choice [7, 8]. Studies have shown no teratogenic effects of adenosine with a rather good efficacy safety profile [9], a close monitoring of foetal heart activity is however recommended because of the risk of foetal bradycardia [9]. If unsuccessful, intravenous flecainide can be used to terminate the tachycardia [10].

In case of haemodynamic compromise, external electric shock is recommended whatever the stage of pregnancy [11]. Electrical cardioversion is generally safe but foetal monitoring is mandatory.

Prophylactic treatment for arrhythmia recurrence includes beta-blockers, flecainide in case of intolerance or uncontrolled symptoms, catheter ablation [12, 13] is indicated only in cases of uncontrolled and poorly tolerated arrhythmia. The ablation should be performed in an experienced centre. It is preferable to postpone the ablation to the second trimester after the organogenesis is completed. for radiation doses of less than 50 mGy, there is no evidence of an increased risk of congenital malformation or abortion, nevertheless fluoroscopy should be as brief as possible with use of a protective X-ray shield on the abdomen to minimize the risk of foetal radiation, and it is advised to use the electro-anatomical mapping system which is reported to significantly decrease the overall radiation dose of the ablation procedure [13].

CONCLUSION

The hemodynamic and electrophysiological changes occurring during pregnancy facilitate the development of arrhythmias, especially in the presence of an anterograde conducting accessory pathway. Early diagnosis and adequate multidisciplinary management are key factors to minimize the risk of foetotoxicity and to avoid the risk of sudden death in both the mother and the foetus.

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