CASE REPORT

Supraventricular Tachycardia in Pregnancy

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Treatment of paroxysmal supraventricular tachycardia during pregnancy is necessary to protect both mother and the fetus. In case of hemodynamic deterioration, pharmacological treatment is the treatment of choice. There are limited reports for the safety and efficacy of verapamil use in pregnancy for treatment of paroxysmal supraventricular tachycardia. Numerous case reports and a retrospective study suggest that adenosine is safe and effective for these kinds of arrhythmias. **Key words:** Supraventricular tachycardia, pregnancy.

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1. INTRODUCTION

We present a 32-yr-old patient-physician; a Caucasian pregnant woman with SVT. Before pregnancy, verapamil had always terminated successfully her episodes of paroxysmal supraventricular tachycardia. During her first pregnancy, she suffered from an attack of paroxysmal supraventricular tachycardia. Verapamil was given without success and her condition was destabilized even more. Adenosine was effective in converting her arrhythmias.

2. CASE PRESENTATION

Verapamil is not effective and it even worsens symptoms and impairs hemodynamics. Adenosine proved to be safe and effective in treatment of paroxysmal supraventricular tachycardia in pregnancy. Introduction In women of reproductive age, the most common arrhythmia is PSVT. In pregnancy it is defined as any tachyarrhythmia with a heart rate greater than 120 beats/min, requiring atrial or atrioventricular junctional tissue for its initiation and maintenance. The diagnosis is confirmed by ECG (1). PSVT causes or exacerbates symptoms which more than half of pregnant women already have (such as dispnea, palpitations, dizziness, presyncope, and syncope) (2).

Treatment of PSVT in pregnancy may also affect the fetus. For this reason, non-pharmacological treatments are chosen, including vagal maneuvers such as carotid massage, Valsalva maneuver and facial ice immersion. These are well tolerated and aid in diagnosis. Pharmacological treatment is best reserved for those with hemodynamic changes, severe symptoms, or sustained arrhythmias. Adenosine, a naturally occurring purine nucleotide, transiently depresses sinus node activity and slows atrioventricular conduction, and is also effective in terminating PSVT. It is rapidly metabolized with an elimination half-life of less than 10 seconds. In addition, adenosine does not cross the placenta, making it suitable for use in pregnancy. Numerous case reports, and one retrospective study, suggest that adenosine is safe and effective (3,4). The first case describing the use of adenosine in human pregnancy appeared in 1991 (5). Verapamil, a calcium channel-blocking agent, is as effective as adenosine in converting an PSVT to sinus rhythm, in the general population (6). Peripheral vasodilation and negative inotropy are unwanted side-effects causing or xacerbating systemic hypotension, congestive heart failure, bradyarrhythmias, and ventricular fibrillation. In addition, verapamil readily crosses the placenta and has been shown to cause fetal bradycardia, heart block, and when used in higher doses, fetal toxicity. There are limited reports of its safety and efficacy for use in pregnancy for treatment of PSVT (7,8).

3. DISCUSSION

A 32-yr-old caucasian woman, physician, with a BMI of 23.67 (height 1.67 m and weight 66 kg at term) without past history of heart disease, except PSVT from childhood. No history of smoking or alcohol abuse. She took verapamil as needed for her PSVT episodes and this proved successful. At 38 weeks of gestation during her first pregnancy, in the morning, she suffered from an attack of PSVT. She was seen by her family physician and her PSVT was confirmed by ECG; with heart rate 219 beats/min(fig.1)Fig. 1. Shows ECG during the attack of PSVT in the pregnant woman

He recommended for her to take verapamil orally (40 mg), since it always reverted her arrhythmia to a normal sinus rhythm. However, this time PSVT was not converted to a normal sinus rhythm even after 8 hours, at which point she was referred to the nearest Emergency Center where she was given

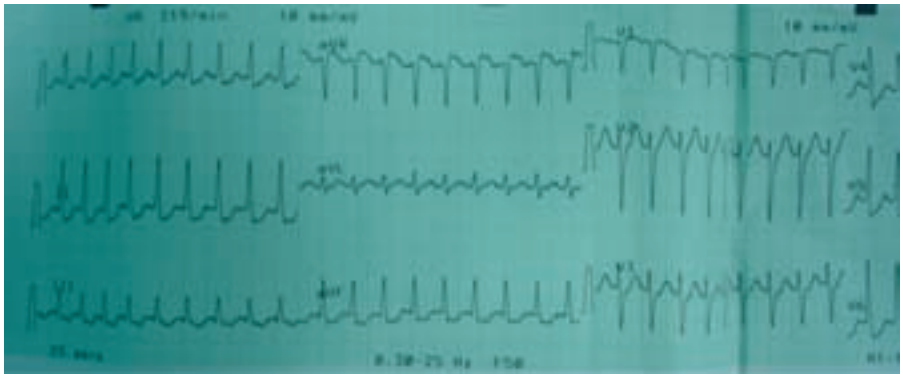

FIGURE 1. ECG. shows ECG of attack of paroxysmal supraventricular tachycardia in the pregnant woman

FIGURE 2. ECG. Shows ECG changes after adenosine administration with bursts of ventricular tachycardia and cardiac pauses

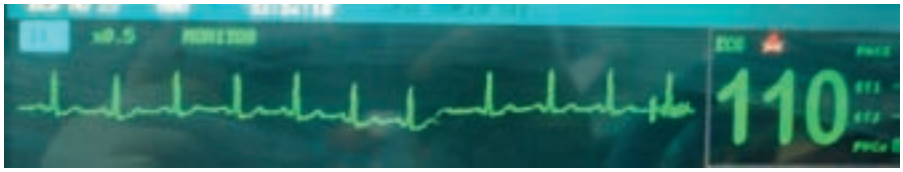

FIGURE 3. ECG. Shows ECG conversion into normal sinusal rhythm

verapamil intravenously, with no effect. Since, she was not hemodynamically stable (BP=80/40 mmHg) and her symptoms worsened she was sent to our Emergency Center at 11:35 PM. Because verapamil was ineffective, we decided to terminate PSVT with adenosine, 6 mg rapidly intravenously. The PSVT was successfully terminated after a short burst of VT (Figure 1) and cardiac cycle pauses (Figure 2), followed by sinus rhythm (Figure 3).

The PSVT had lasted for more than 15 hours. She was discharged and returned at 40 weeks in labour, which developed spontaneously. Delivery of a healthy baby occurred shortly afterwards. The consequent echocardiography did not show any pathology.

Paroxysmal supraventricular tachycardia is seen somewhat frequently in the emergency department but less frequently during pregnancy. However, it is the commonest sustained arrhythmia in pregnant women. Definition and pathoanatomy of PSVT is well known. Diagnosis is confirmed by ECG. Paroxysmal supraventricular tachycardia, per se, and pharmacological treatment of PSVT in pregnancy may affect both mother and fetus. For this reason, non-pharmacological treatment (vagal maneuvers, Valsalva maneuver and facial ice immersion), is treatment of choice to terminate PSVT and to avoid side effects of medications. Pharmacological treatment is best reserved for those with haemodynamic changes, severe symptoms or sustained arrhythmias. Verapamil has been the most commonly used agent for the treatment of PSVT with a narrow QRS complex. Potential side effects of verapamil including systemic hypotension, acute heart failure, bradyarrhythmia, and heart block may occur in pregnant women. After placental transfer bradycardia, heart block, depression of contractility, ventricular fibrillation and hypotension may be induced in the fetus. In addition, verapamil readily crosses the placenta and has been shown to cause fetal bradycardia, heart block and in higher doses, fetal toxicity. There are limited reports of its safety and efficacy for use in pregnancy for treatment of PSVT (8,9).

Adenosine is rapidly metabolized with an elimination half-life of less than 10 s; it transiently depresses sinus node activity and slows atrioventricular conduction, and is very effective in terminating PSVT even in the cases of hypotension and other unstable conditions. In addition adenosine does not cross the placenta, making it suitable for use in pregnancy. After its first use in 1991 (7) numerous case reports (3) and a retrospective study (4), suggest that adenosine is safe and effective. Safety and effectiveness has been reported when verapamil was ineffective (9). We report on the case of 32-yr-old physician, suffering PSVT, that orally used verapamil after 2 hours of PSVT onset, was ineffective. Verapamil was used intravenously approximately 6 hours after oral use and caused the unwanted side effects of hypotension and acute congestive heart failure. In this unstable condition she was admitted in our centre after approximately 15 hours of PSVT. After taking ECG, SPO2, respiration rate and blood pressure monitoring, she was given adenosine intravenously. After a very short burst of VT and pauses she was converted to sinus rhythm. During the time of attack, it was referred that she had palpitations and pulse rate at always approximately 220 beats/min. The symptoms dramatically worsened after intravenous verapamil use.

4. CONCLUSION

PSVT in pregnancy may occur without any detectable reasons. Use of verapamil in our case was not effective, furthermore it deteriorated the condition and impaired hemodynamics Adenosine proved as safe and effective in treatment of PSVT in pregnancy.

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