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SUPRAVENTRICULAR TACHYCARDIA IN PREGNANCY AND ITS MANAGEMENT

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ABSTRACT

Background: Supraventricular Tachycardia (SVT) in Pregnancy is defined as any tachyarrhythmia with a heart rate greater than 120 beats/minute. SVT in pregnancy jeopardises the safety of both mother and fetus. **Aim:** In this study, we present a case of SVT in pregnancy and its management. **Material and Methods:** The study was done in a tertiary care centre of Southern India. A 24-year old female G4P1L1A2, previous normal vaginal delivery, 20 weeks of gestation, came with the history of sudden onset of palpitations and breathlessness on exertion. She had no previous history of any major medical illness or surgical intervention in the past. She was admitted in ICU. Clinical examination showed a pulse rate of 170/minute, Blood pressure of 110/70 mm Hg, ECG showed the presence of Supraventricular Tachycardia. 2D Echocardiogram ruled out any structural abnormality of heart. Hyperthyroidism, electrolyte imbalance and anemia have been ruled out. **Results:** Management consisted of: carotid sinus massage was done followed by IV adenosine 6 mg stat. With no improvement, IV adenosine 12 mg was given. Patient reverted to transient sinus rhythm followed by SVT. Then iv amiodarone 150 mg was given over 30 minutes. This reverted the patient's heart rate to sinus rhythm. There were no further episodes of SVT during the admission period. Patient was advised to continue tablet Metoprolol 25 mg OD and discharged. **Conclusion:** The acute management of SVT in pregnancy remains a difficult conundrum. Treatment remains challenging as clinical decision must be tackled with consideration of both maternal and fetal factors.

KEYWORDS : Supraventricular Tachycardia in Pregnancy, Case Study, South India, Conservative Management

INTRODUCTION

Supraventricular Tachycardia (SVT) in Pregnancy is defined as any tachyarrhythmia with a heart rate greater than 120 beats/minute[1]. It is paroxysmal in nature and is the commonest arrhythmia among pregnant women. This requires atrial or atrioventricular junctional tissue for initiation and maintenance. Majority of the population have atrioventricular nodal re-entry and Wolf-Parkinson-White syndrome. Also, SVT in pregnancy has a sudden onset and ends abruptly.

Pregnancy is a known risk factor for paroxysmal SVT[2]. The incidence of paroxysmal SVT among pregnant women is largely unknown due to lack to reliable data. However, estimates show that incidence might be around 35/ 100000 person-years[3]. Around 50% of this population is asymptomatic. Symptomatic patients have dyspnea, dizziness, palpitations, presyncope and syncope. Though these symptoms are a part of normal pregnancy, SVT tends to exacerbate these symptoms.

There is an increased incidence in the episodes of SVT especially during the third trimester. Atrial or ventricular premature beats are reported[5]. This can be a result of autonomic, hormonal, hemodynamic and emotional factors. Hyperdynamic circulation due to the expanding volume leads to the irritability of the myocardium. The resultant faster sinus heart rate affects the excitability of the tissues thereby giving rise to a re-entry circuit. The role of estrogens in increasing cardiac excitability has been postulated[6-9]. Estrogens are known to increase the number of alpha-adrenergic receptors in myocardium and thereby sensitise them to catecholamines[10]. Other triggers include anaesthetic drugs, peripartum oxytocic and tocolytic drugs. An underlying structural or congenital heart disease is also a main risk factor[11]. In most of the cases, there is no history of heart disease.

The diagnosis is done by ECG. Treatment depends on the condition of the patient. In hemodynamically stable patients, physical treatments like sinus carotid massage or Valsalva. Manoeuvers are tried and subsequently given drug therapy. When the patient is hemodynamically unstable, electrical cardioversion or invasive method like radiofrequency ablation are used. There are no conclusive studies or trials on the safety of ECV in pregnancy. All the standard operating procedures and guidelines are based on expert consensus[12].

In this study, we present a case of SVT in pregnancy and its management. The study was done in a tertiary care centre of Southern India.

Case Report

A 24-year old female $G_4P_1L_1A_2$, previous normal vaginal delivery, 20 weeks of gestation, came with the history of sudden onset of palpitations and breathlessness on exertion. She had no previous history of any major medical illness or surgical intervention in the past. She was admitted in ICU.

Clinical examination showed a pulse rate of 170/minute, Blood pressure of 110/70 mm Hg, ECG showed the presence of Supraventricular Tachycardia. 2D Echocardiogram ruled out any structural abnormality of heart. Hyperthyroidism, electrolyte imbalance and anemia have been ruled out.

Management Consisted of:
Carotid sinus massage was done followed by IV adenosine 6 mg stat. With no improvement, IV adenosine 12 mg was given. Patient reverted to transient sinus rhythm followed by SVT. Then iv amiodarone 150 mg was given over 30 minutes. This reverted the patient's heart rate to sinus rhythm. There were no further episodes of SVT during the admission period. Patient was advised to continue tablet Metoprolol 25 mg OD and discharged.

Following ECG shows the presence of SVT and its subsequent resolution.

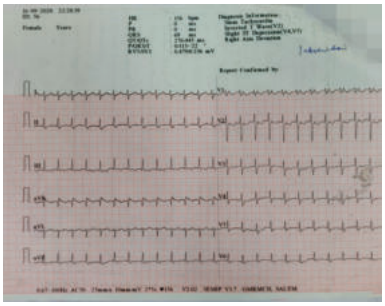

Image 1: ECG on Admission

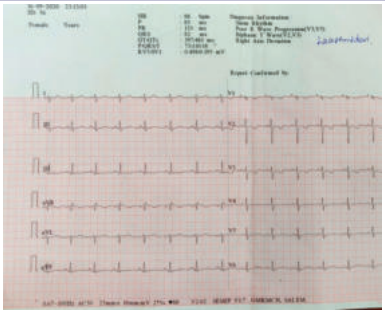

Image 2: ECG After Reverting SVT

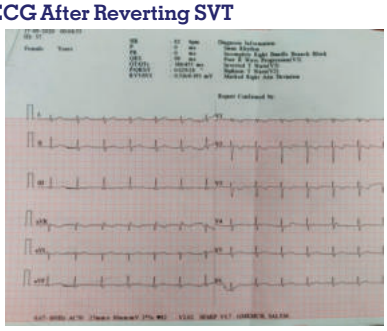

Image 3: ECG on Day 2

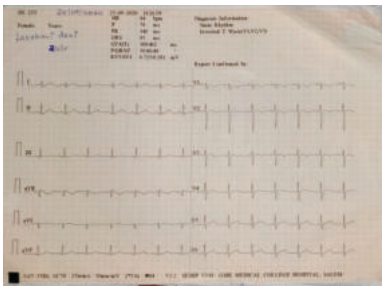

Image 4: ECG on Discharge

DISCUSSION

SVT in pregnancy jeopardises the safety of both mother and fetus. Most of the times, there is no previous history of any known heart disease and are asymptomatic. The symptoms are non-specific in nature and is predisposed and exacerbated by pregnancy. The decision is arrived at using an ECG[10,13]. One of the earliest intent in management is to rule out any structural abnormality of the heart which is done using an echocardiography. An opinion from the cardiologist is necessary at the early stages to help in the diagnosis and also rule out other cardiac diseases. This calls for an effective collaboration between a cardiologist and an obstetrician. The collaboration should be continued till puerperium to prevent any recurrences[10,13,14].

The main challenge is designing a management for SVT in pregnancy as there are no large scale studies or reliable data on this. Most of the knowledge comes from the case studies and observational studies. Any clinical decision must take both the maternal and fetal factors into consideration and both of them must be monitored during the treatment.

When the patient is hemodynamically stable, non-invasive techniques like Valsalva manoeuver or carotid massage can be done while positioning the patient in the left lateral position. Oxygen should be administered along[7] with establishing the intravenous access. Pharmacological treatment is preferred when these measures are not effective. Adenosine is the first line of treatment followed by low dose of b-blockers. Verapamil is considered as second line of treatment but only after second trimester of pregnancy. External Cardioversion is considered when these measures fail or when there are life-threatening symptoms. Data on perinatal outcome is also very limited.

CONCLUSION

The acute management of SVT in pregnancy remains a difficult conundrum. Treatment remains challenging as clinical decision must be tackled with consideration of both maternal and fetal factors.

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