



Pregnancy with A Sick Heart

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ABSTRACT

Sick sinus syndrome (SSS) refers to a collection of cardiac arrhythmias associated with dysfunction of the sinoatrial node that commonly leads to disorders in cardiac rhythm and conduction. Mechanisms underlying the pathogenesis of sinus node dysfunction in SSS patients still appear unclear since degenerative fibrosis of nodal tissue has been the closest pathology associated but it is noteworthy to mention the occurrence of this condition in the younger population as well. Manifestations of this disease can be diverse with being totally asymptomatic to vague symptoms like bradyarrhythmia, tachyarrhythmia, syncope, palpitations and dizziness. Diagnosis can be quite difficult due to the stated diverse symptoms. Definite treatment is the replacement of a defective pacemaker with a synthetic pacemaker. Pregnancy with underlying heart disease should be carefully monitored and managed. However, pregnancy after surgical correction of underlying cardiac anomaly has shown a good prognosis in recent years due to the availability of various improved surgical techniques. Below is a depiction of how pregnancy with a prosthetic valve was managed effectively by a multidisciplinary approach that yielded a good outcome.



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INTRODUCTION

Incidence of heart disease in pregnancy being 1-4% of the general population, it is also found to have caused 10-15% of maternal deaths in developed countries. [1-3] Changes in the hemodynamic and cardiovascular system during pregnancy are as follows:

1. Increase in blood volume

2. Increase in cardiac output

3. Increase in stroke volume leading to increase in preload

4. Increase in heart rate causing pulmonary congestion/ oedema.

These physiological changes that occur in every normal pregnancy have found to put additional stress on a mother with an underlying cardiac condition, thus leading to a number of complications that may arise during the antenatal, intrapartum or postnatal period. Sick sinus syndrome (SSS) refers to a collection of cardiac arrhythmias associated with dysfunction of the sinoatrial node that commonly leads to disorders in cardiac rhythm and conduction. Mechanisms underlying the pathogenesis of sinus node dysfunction in SSS patients still appear unclear since degenerative fibrosis of nodal tissue has been the closest pathology associated but it is noteworthy to mention the occurrence of this condition in the younger population as well. SSS many times can be asymptomatic or mildly symptomatic that include

non-specific symptoms like bradyarrhythmia, tachyarrhythmia, syncope, palpitations and dizziness, thus making diagnosis quite tricky. 24-hour Holter monitoring and echocardiogram will aid in the process to some extent. However, replacement with a prosthetic pacemaker is the definite treatment option.

ILLUSTRATION

A 33-year-old gravida 5, para 2, live 2, abortion 2 at 37 weeks and 6 days of gestation came in labour pain for 3 hours. Antenatal ultrasound revealed 2907grams foetus in breech position, anterior placenta with amniotic fluid index 6.1(reduced). The foetal doppler study was normal. She was a known case of sick sinus syndrome with a pacemaker in situ from 2010 (Figure 1). On presentation, her vitals were stable with a pulse rate of 70/min, and no elevated JVP was noted. On auscultation S1S2 was heard, no murmurs elicited, and normal vesicular breath sounds were heard. Per abdomen, uterus of term gestation was noted. After going through old records, it was found that the pacemaker battery had a life of 12 years and had recently expired. She was not on regular follow-up with her cardiologist, thus the working condition had not been checked then. Since the patient presented with breech presentation and borderline oligohydramnios in labour, we were forced to take her for an emergency cesarean section before the condition of the pacemaker battery could be checked. However, ECG (Figure 2) and 2D ECHO (Figure 3) was done immediately; cardiologist opinion was obtained and prophylaxis for infective endocarditis with injection ampicillin 2g+1.5mg/kg IV and injection gentamicin 80 mg IV given STAT pre-op as well as during post-op period. [4] Use of cautery was completely avoided intraoperatively. Anaesthetist fitness was sought and surgery was done under spinal anaesthesia with full caution. Following anaesthetist orders, the patient was monitored in ICU for 1 day and then shifted back to the ward. Religious monitoring of vitals was done and found to be within normal limits throughout. Antibiotic cover was followed for 7 days post-operatively. The patient showed speedy recovery and a cardiology review was obtained with repeat ECG and ECHO. Though they showed normal findings, the patient was advised a pacemaker replacement to avoid sudden cardiac dysfunction that may arise due to a pacemaker with an expired battery in situ. The patient wanted to follow up with her cardiologist and hence letter of referral was given and the patient was transferred to another hospital.

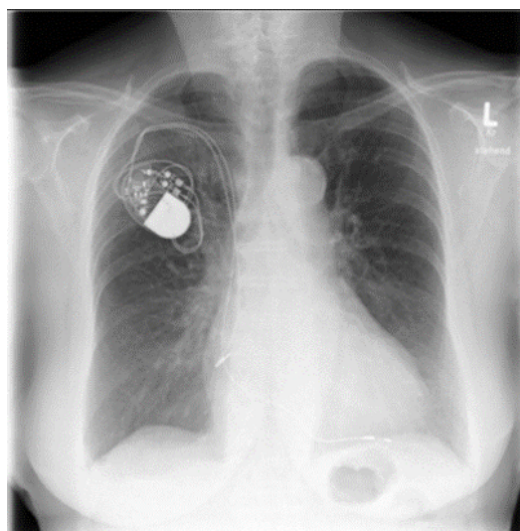


Figure 1: X-ray showing pacemaker in situ

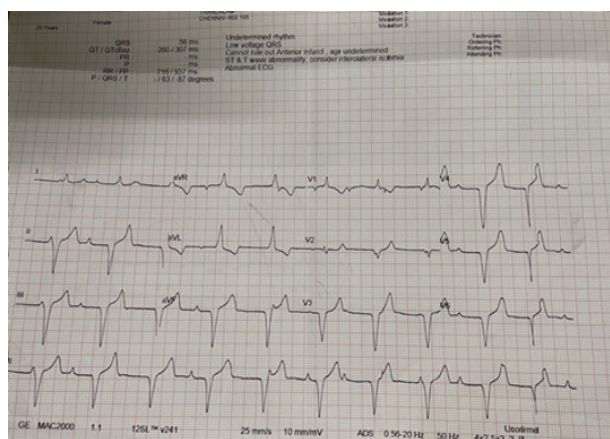


Figure 2: ECG showing sinus rhythm

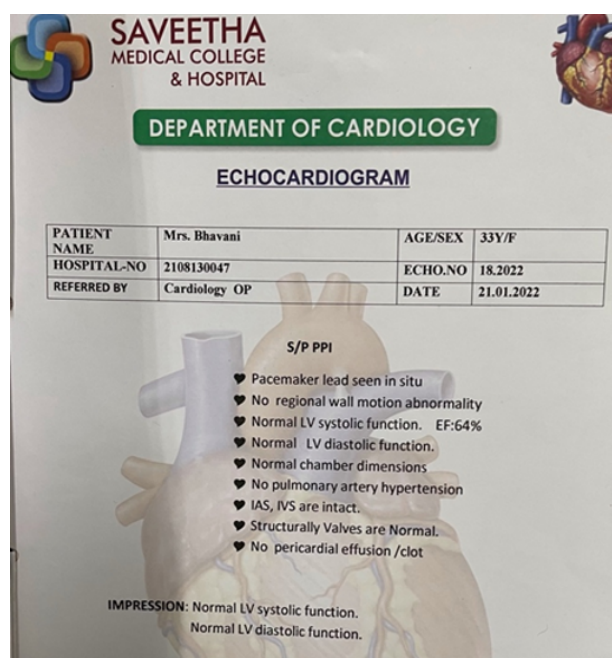


Figure 3: 2D ECHO showing pacemaker in situ and Normal working condition of the heart

DISCUSSION

Sick sinus syndrome, mainly a degenerative disorder, manifests quite late in life. The presentation of such a cardiac condition during pregnancy is quite unusual. However, recently Ichitaro et al. reported an association between novel SCN5A mutation (M1838V) and familial SSS diagnosed during pregnancy. [5] Though many pregnant women with cardiac conditions have undergone uneventful pregnancy and delivery and an underlying cardiac pathology per se is not an indication most of the time for a cesarean section, this particular case that has been reported is the first of the kind where emergency surgery was performed on a patient with a pacemaker with expired battery life. Pregnancy with a breech presentation with oligohydramnios was appropriately managed with termination of pregnancy through surgical means but complications that may arise were kept in mind and precautionary measures were adequately taken. Common complications that may arise in such a situation include acute pulmonary oedema, infective endocarditis, congestive cardiac failure, aortic dissection, pulmonary hypertension and arrhythmias. These complications arise due to the following mechanisms:

1. Fall in systemic vascular resistance thus increasing the magnitude of right to left shunts.
2. An increase in cardiac output and blood volume leads to congestive cardiac failure in women with myocardial dysfunction or valvular disease.
3. Increase in risk of thromboembolism due to hypercoagulability of pregnancy.
4. High risk of infective endocarditis in women with uncorrected complex cyanotic congenital heart disease and those within 6 months of surgery.
5. Worsening of arrhythmias in pregnancy causing cardiac decompensation.

Arrhythmias being the most common and lethal complication that may arise in cardiac patients undergoing cesarean section, especially during the intraoperative and immediate postoperative period, was anticipated and patient was put on 24 hours Holter monitoring. The patient's stable condition was ensured by multiple disciplines in the tertiary care centre before discharge and referral. Though arrhythmia is a condition that can be medically managed, most of the drugs used for this purpose have not shown complete safety for use in pregnancy and lactation. This complicates the situation further. To anaesthetise this patient with a sick heart was not easy and great risk was taken by the anaesthesia team. The pregnancy outcome was good in this case

as a healthy girl baby weighing 2022 grams with APGAR 7/10 and 8/10 at 1min and 5 mins of life was born and immediately given to the mother for breastfeeding. Foetal echo taken during pregnancy had shown normal findings, which was again confirmed with a repeat echo done on day 7 of life. Among women with uncorrected congenital heart disease, the risks of maternal death (15% vs. 0%), foetal or neonatal death (15% vs. 0%), and prematurity (32% vs. 7%) are all higher than among women with surgically corrected lesions. [6]

CONCLUSION

A multidisciplinary approach to pregnancy with underlying cardiac conditions with surgical management has been depicted here. Literatures like this will be helpful for future references and management of similar cases.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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