



Case Report on Sick Sinus Syndrome

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ABSTRACT: Sick sinus syndrome (SSS) a cardiac conduction disorder characterized by the symptomatic dysfunction of sinoatrial node. The sinus node is normal pacemaker of the heart and is responsible for the regular, rhythmic, heartbeat. Sick sinus syndrome affects about 3 out of every 10000 persons, and becomes more common with advancing age. The symptoms of the sick sinus syndrome include palpitations, fainting or dizziness, fatigue, weakness, confusion, chest pain, and disturbed sleep. Women and men are affected equally. As the age increases the number of pacemaker cells in the sinus node decreases and the normal wear and tear on the sinus node and the conduction system may result in SSS. The diagnosis is done by ECG, Holter monitor. In ECG SSS usually manifests as sinus bradycardia, sinus arrest, or sinoatrial block, and sometimes accompanied by supraventricular tachy arrhythmias. The treatments of SSS include implantation of artificial pacemaker.

CASE REPORT

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INTRODUCTION

Sick sinus syndrome (SSS) is a cardiac conduction disorder characterized by the symptomatic dysfunction of sinoatrial node. Since sinus node is the normal pacemaker of the heart its dysfunction is a cause for concern [8]. Sinus node dysfunction results from the abnormal automaticity, conduction, or both of the sinoatrial node and surrounding tissues. Both could result from abnormal mechanisms, including fibrosis, atherosclerosis, and inflammatory/ infiltrative processes.

The malfunctions in the sinus node may result in

- 1. The heartbeat may become too slow for the demands of the body (also known as inappropriate bradycardia).
2. The heartbeat may become too fast even at rest (also known as inappropriate tachycardia).
3. The heartbeat may alternate between fast and slow (so-called bradycardia-tachycardia syndrome).
4. There may be sudden pauses in the normal activity of sinus node (sinus node pauses or sinus arrest) of longer than 2 or 3 seconds [2].

The risk factors of sick sinus syndrome include persons with hyperkalemia, hypothyroidism, persons

taking medications for hypertension and other cardiac diseases, persons who have suffered from heart attack, race, alcoholism, and smoking. The symptoms of the SSS include palpitations, fainting, dizziness, fatigue, weakness, confusion, chest pain, chronotropic incompetence, angina, heart failure, disturbed sleep [2]. The Pathophysiology includes Sinus bradycardia as any of the other brady arrhythmias is caused by a multitude of intrinsic and extrinsic factors which may compromise the integrity of the sinus node. These factors can cause failure of the impulse formation at the sinus node, impulse conduction at the atrio ventricular node or bundle of his purkinje fibers [10]. The diagnosis of SSS is confirmed by a variety of tests. The electrocardiogram (ECG) records the electrical activity of heart [2]. The electrocardiographic features of this disease include:

- Persistent, severe and inappropriate sinus bradycardia.
▪ Episodes of sinoatrial block, sinus arrest, or both.
▪ Cessation of sinus rhythm or long pauses with failure of subsidiary pacemakers.
▪ Replacement of sinus rhythm by an ectopic atrial or junctional pacemaker
▪ Prolonged suppression of sinus rhythm after spontaneous or electrical cardio version fromatrial

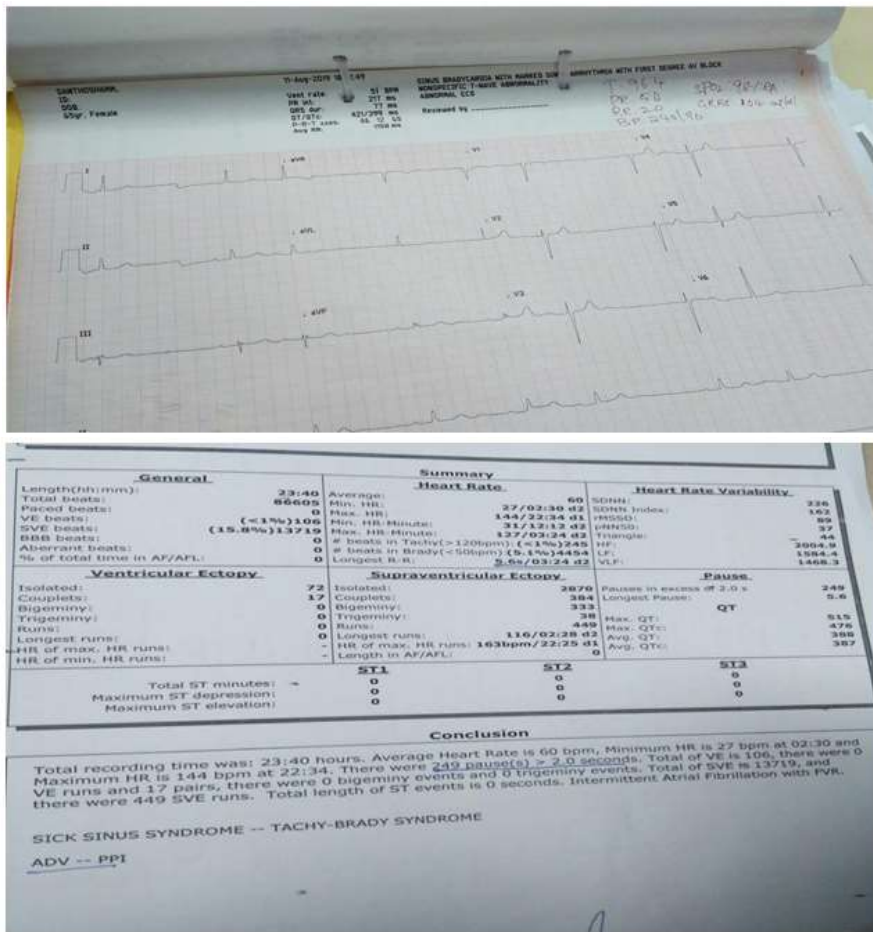
tachyarrhythmia or bradycardia alternating with tachycardia.

- Paroxysmal or chronic atrial fibrillation caused by permanent silence of sinoatrial node; atrial fibrillation often shows a slow ventricular rate (owing to additional atrioventricular node disease) [9].

There are no medications that reliably increase the heart rate in persons with heartbeat that is too slow. Hence persons with severe symptoms of SSS therefore need to have an artificial pacemaker implanted in their body [2]. Patients with sick sinus syndrome (SSS) and bradycardia can be treated by either a single-lead atrial pacemaker (AAIR) or a dual-chamber pacemaker (DDDR). AAIR pacing preserves a normal contraction pattern similar to the one seen during sinus rhythm, whereas DDDR pacing may lead to abnormal contraction patterns in the ventricles [5].

A 66years old female patient reported at emergency department with loose watery stools since afternoon associated with abdominal pain radiating to chest and shortness of breath since few days on 11<sup>th</sup> August 2019. ECG is performed to the patient who stated bradycardia with prolonged PR interval. The empirical treatment given to the patient is Inj.pan, Inj. Zofer, and Inj. proscopan. Patient was admitted in ICU and laboratory tests like 2Decho, LFT, RFT, CBC, Electrolytes and angiogram were performed. 2D echo stated no RWMA, mild MR, Trivial TR, no AR/PAH, normal LV function, grade-I,D.D., EF-55%. Holter test was done and the report showed that total recording time was 23.40hours, average heart rate was 60 beats per minute, minimum heart rate is 27 beats per minute, And maximum heart rate was 144 beats per minute. Total of supraventricular ectopic (SVE) beats was 13719 and there were 449 SVE runs. Total length of ST events was 0.3 seconds and reported that intermittent atrial fibrillation with Fast ventricular rate(FVR) and stated that sick sinus syndrome(tachy-brady syndrome).Angiogram stated that single vessel disease(RCA) advised to PTCA-RCA but because of irregular heart rhythm which is due to SA node dysfunction the patient was suggested with pace maker implantation.

## CASE REPORT



On the day of admission the patient was treated with T.Alupent, Inj. Pantop, Cap.Redotril, and Econorm sachet in half glass water. After the patient is stabilized she was shifted to the ICU and treated with Inj.Calcium gluconate, Rantac, Inj. Pantop, T.prolomet, Inj. Monocef, T. pantop, T. Tramazac-P and T. Dytorplus. The permanent pacemaker implantation (PPI) was done to the patient.

## DISCUSSION

Sick sinus syndrome (SSS) is a cardiac conduction disorder characterized by sinoatrial node dysfunction. The syndrome occurs in roughly one of every 600 cardiac patients older than 65 years and accounts for around 50% of all pacemaker implantation. Thus every year around 400000 patients are diagnosed for sick sinus syndrome and treated with a pacemaker.

A hallmark of sinoatrial pacemaker action potentials is the presence of slow diastolic depolarization phase after repolarization. Sick sinus syndrome is characterized by a generalized malfunction of the cardiac conduction system. The etiology of sick sinus syndrome is not completely understood but histopathological finding suggest that a degenerative fibrosis is the main cause of the abnormal cardiac automaticity conduction.

## RESULTS & CONCLUSION

She was symptomatically improved after insertion of pacemaker and vitals are normal and stable on discharge condition. She was counseled with non-pharmacological remedies to maintain normal condition.

Lifestyle modifications are exercise regularly and eat healthy food such as low-fat diet, fruits, vegetables and whole grains, maintain healthy weight, keep blood pressure and cholesterol under control, control stress, regular checkups.

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