

Managing Rare and Complex Arrhythmias During Pregnancy: A Case Study

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Abstract: Arrhythmias in pregnancy are common and may cause concern for the wellbeing of both the mother and the fetus. It may be a recurrence of a previously diagnosed arrhythmia or the first presentation in a patient with structurally normal heart. Most of the arrhythmias are benign, although some arrhythmias in a structurally abnormal heart have to be treated seriously. Sinus tachycardia and non-sustained arrhythmias are common during the last trimester of pregnancy. In patients with a structurally normal heart, the arrhythmias are usually AVNRT, AVRT due to an accessory pathway, acquired long QT syndrome due to metabolic reasons or drugs. We are presenting this case due to its rarity. The patient presented with varying, at least 4 types of arrhythmias within a span of days and threw a special challenge in the management.

Keywords: Arrhythmias, Holter, Atrial flutter, SCN5A, HCN4, Dual chamber pacemaker

1. Case Report

A 24 year old patient G3P1L1A1 with no significant past history was admitted with 2 days history of palpitation.

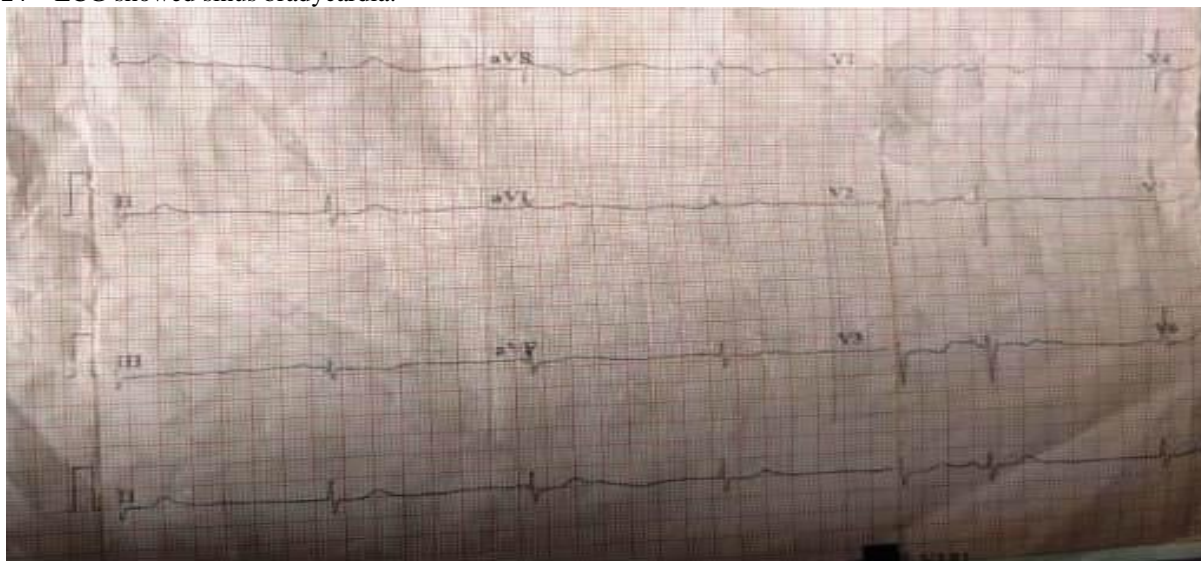
General examination was normal and systemic examination also did not provide any specific abnormalities. USG abdomen confirmed a 9 weeks single alive fetus with a good

FH. Routine blood investigations were done, which were also normal, including normal hemoglobin and thyroid function test.

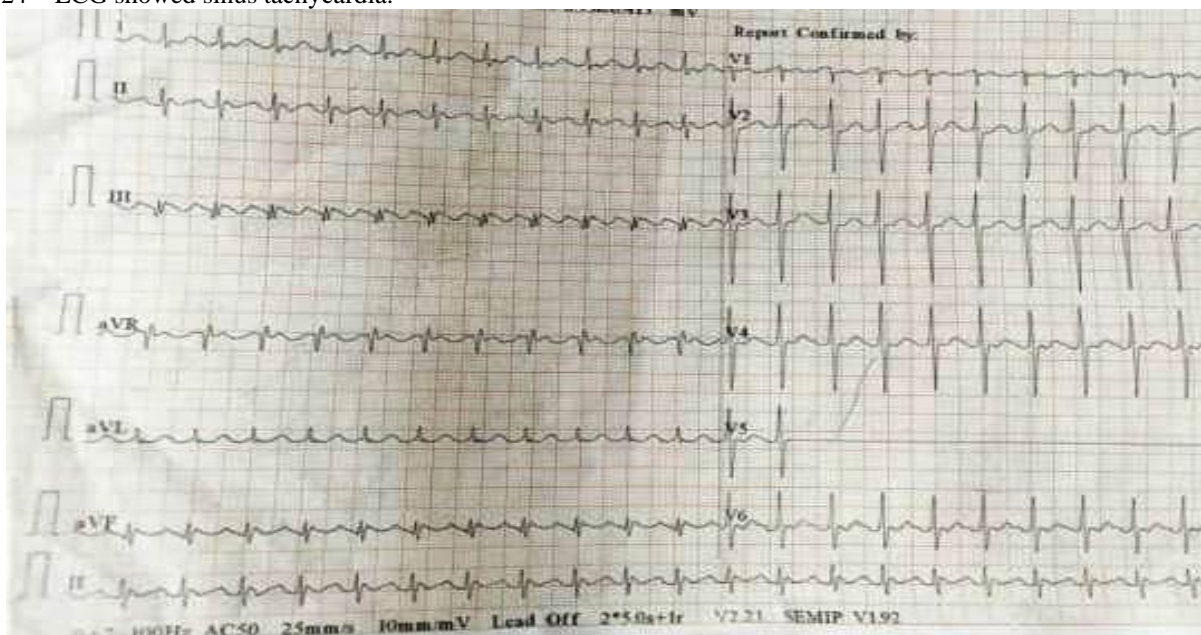
Serial ECGs showed interesting variations:

On admission,

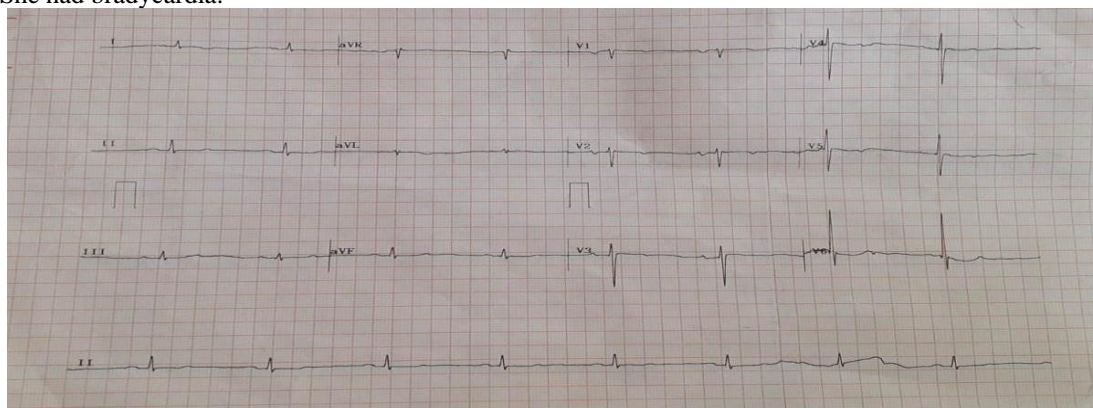
2/3/2024 – ECG showed sinus bradycardia.



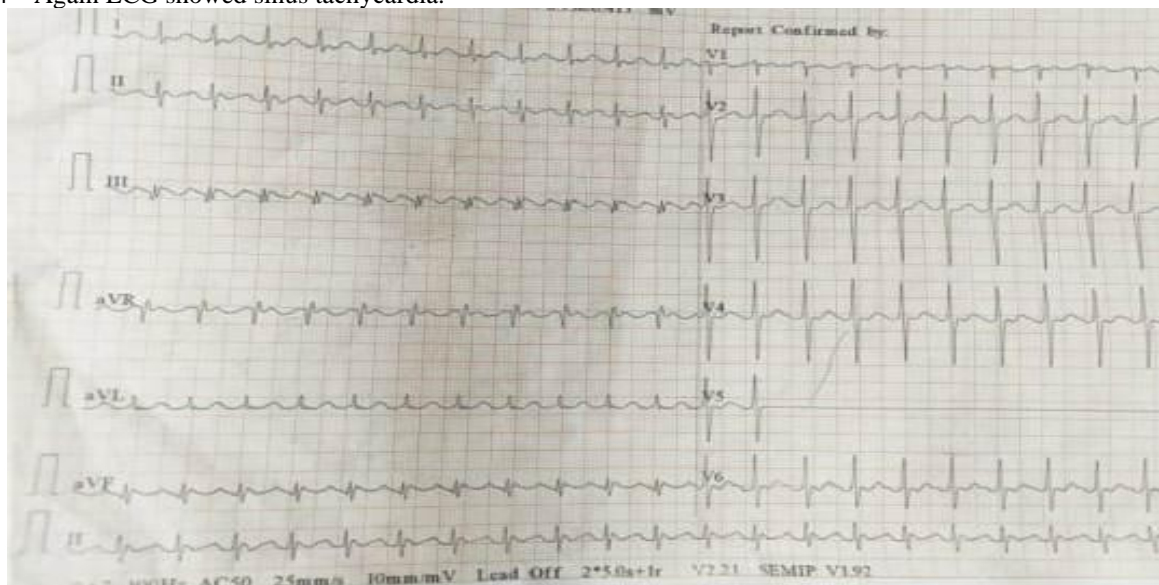
4/3/2024 – ECG showed sinus tachycardia.



5/3/2024 – She had bradycardia.



9/3/2024 – Again ECG showed sinus tachycardia.



Echo was done which showed structurally normal heart.

In view of the varying ECG presentations, Holter study was done on the patient for a total recorded time of 18 hours 13 minutes.

Holter report:

- Maximum atrial rate – 310 bpm
- Average heart rate – 116 bpm
- Maximum heart rate – 155 bpm
- Minimum heart rate – 58 bpm during sleep.

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- Final diagnosis – Atrial flutter with variable block ranging from 2:1 to 6:1.

The patient comes under WHO Class II cardiac risk and needed anticoagulation. Hence, she was started on low molecular weight heparin which was advised upto 12 weeks of weeks of gestation, after which she would be prescribed oral anti-coagulants.

2. Discussion

Although benign arrhythmias are common during pregnancy, presentation like that of a sick-sinus syndrome is extremely rare and has been less reported in the literature. Thyroid, electrolyte abnormalities, pulmonary embolism and alcohol abuse should be considered in the etiology. The commonly associated genes which present in such a manner would be SCN5A AND HCN4. We are planning a genetic study in the patient to ascertain if she has any genetic predisposition for the problem. Initial treatment would be rate control with anti-coagulation because pregnancy by itself is a prothrombotic state. DC cardioversion may be needed of the for the index episode or inadequate rate control, provided if the flutter is less than 48 hours old. Safe drugs would be beta blockers, calcium channel blockers. Adenosine and digoxin are also safe. Flecainide and sotalol may be safely used. Amiodarone should also be avoided unless no other option is available, and then used for a short of a duration as possible. If the ventricular arrhythmias are unabating, device implantation under minimal fluoroscopy and echo guidance will be the treatment of choice, or as a last resort, catheter ablation under minimal fluoroscopy can be tried. Because there are no other significant symptoms other than palpitation, we are not planning any intervention on her at the present and she is under constant monitoring. After her delivery, we are planning to start her on anti-arrhythmic drugs and put her on a dual chamber pacemaker. We are presenting this case for the rarity of the presentation and how it could be challenging to treat such patients during pregnancy.

3. Conclusion

A multi-disciplinary and/or integrative approach to arrhythmia management from the prepartum to the postpartum period is the need of the hour. Pregnant women with significant arrhythmias require a multidisciplinary approach, including at the time of labor and delivery. In addition, prenatal counseling regarding the high risk of arrhythmia recurrence during pregnancy, and close monitoring in high-risk patients are essential for successful maternal and fetal outcomes.

References

- [1] Joglar J.A., Kapa S., Saarel E.V., et al. 2023 HRS expert consensus statement on the management of arrhythmias during pregnancy. *Heart Rhythm*. 2023;(23): S1547–S5271. doi: 10.1016/j.hrthm.2023.05.017. May 19. 02246-4. [DOI] [PubMed] [Google Scholar]
- [2] Chatur S., Islam S., Moore L.E., Sandhu R.K., Sheldon R.S., Kaul P. Incidence of syncope during pregnancy:

temporal trends and outcomes. *J Am Heart Assoc*. 2019;8 doi: 10.1161/JAHA.118.011608. [DOI] [PMC free article] [PubMed] [Google Scholar]

- [3] Silversides C.K., Grewal J., Mason J., et al. Pregnancy outcomes in women with heart disease: the CARPREG II study. *J Am Coll Cardiol*. 2018; 71:2419–2430. doi: 10.1016/j.jacc.2018.02.076. [DOI] [PubMed] [Google Scholar]
- [4] Higuchi H., Takagi S., Zhang K., Furui I., Ozaki M. Effect of lateral tilt angle on the volume of the abdominal aorta and inferior vena cava in pregnant and nonpregnant women determined by magnetic resonance imaging. *Anesthesiology*. 2015; 122:286–293. doi: 10.1097/ALN.0000000000000553. [DOI] [PubMed] [Google Scholar]
- [5] Shotan A., Ostrzega E., Mehra A., Johnson J.V., Elkayam U. Incidence of arrhythmias in normal pregnancy and relation to palpitations, dizziness, and syncope. *Am J Cardiol*. 1997;79:1061–1064. doi: 10.1016/s0002-9149(97)00047-7. [DOI] [PubMed] [Google Scholar]