

Peripartum Cardiomyopathy - Heart and Hope - A Fascinating Case Report Unveiling Its Fundamental & Evolving Nature

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Abstract: *Peripartum Cardiomyopathy (PPCM) is a rare and life-threatening condition, a dilated cardiomyopathy, which is defined as systolic cardiac heart failure in the last month of pregnancy or within five months of delivery. Its diagnosis is often delayed because its symptoms closely resemble those within the normal spectrum of pregnancy and postpartum period whose consequences can be really devastating for the patients. [1] The incidence of PPCM ranges from 1:300 to 1:15,000 live births [2]. This disorder carries a high mortality rate, 30% to 60%, if not detected timely. We report a case of 27-year-old female who underwent emergency cesarean section and developed acute onset of breathlessness and tachycardia on post operative day 2. On further evaluation her ECG and 2D ECHO changes were quite significant and a diagnosis of recurrent supraventricular tachycardia with peripartum cardiomyopathy in a case of post LSCS was made and the patient was treated by multidisciplinary approach.*

Keywords: Peripartum Cardiomyopathy, Pregnancy

1. Case Report

A 27-year-old G2P1L1 at 39 weeks of Gestational Age with Previous 1 Lower Segment Cesarean Section (LSCS) with Rh Negative Pregnancy came to Government Medical College and Hospital Chhatrapati Sambhajnagar on 20th October 2023. She was a booked ANC case.

Her weight was 97 kg and height 154 cm which made her BMI around 41 (Obese Class 3). Her all-antenatal care profile was done and was within normal limits (GCT and TFT). She was provided with delivery plan during her ANC visit and was admitted for planned LSCS after completion of 39 weeks. With pre-anesthetic evaluation she underwent planned LSCS, with female child, 3.2 kg, cried well. There was no intra-operative complication. Patient was then monitored post operatively as per protocol and started with antibiotics and thromboprophylaxis. Patient was then shifted towards ward and was vitally stable. On post operative day 2 she developed acute onset of breathlessness and tachycardia. On examination patient was conscious and oriented but her pulse was racing and elevating consistently around 250 bpm & BP was 118/88 mmHg, saturation was 98% on room air. RS examination – AEBE and no added sounds were heard, RR- 26/min. CVS- S1S2 heard, tachycardia present. Per abdomen was soft and uterus well retracted. PV examination no bleeding per vagina. Seeing her pulse rate soaring high, it was a dire situation and needed immediate intervention. Urgent anesthesia and physician call was done and immediately carotid massage was started but to no avail. Simultaneously her ECG was being done which was suggestive of Supra Ventricular Tachycardia (SVT). She was then given Inj Diltiazem and Inj MetXL but even then, the patient did not respond following which she was then given 1st cycle of DC shock.

The patient returned back to normal state which lasted for few minutes but subsequently went into SVT again. It was then followed by 2nd cycle of DC shock but all the said

efforts proved to be futile. All these measures lasted for around 15-20 minutes. Therefore, the patient was then immediately shifted to ICCU for further management. On receiving the patient in ICCU her vitals were still haywire with pulse – 220/min and her BP was non recordable. Inj Adenosine, Inj MetXL, Inj Amiodarone all measures were tried and the cycle was repeated according to the standard protocols but to no avail. ECG was continually suggestive of SVT (Atrial Fibrillation) and next cycle of DC shock was given. But there was no sign of patient returning to normal state, so next cycle of DC shock was continued.

All in all, around 15 cycles of DC shock were given over 6-8 hours along with the necessary drug management. It was a dreadful and a dire situation. In the depths of despair hope flickers faintly. Thus, after all the necessary measures and intervention we could finally bring back the patient to normal state after fighting for life and death for around 8-10 hrs. During all this time her saturation was maintained on oxygen by face mask and patient was conscious and well oriented. Her BP was still non recordable for which Noradrenaline drip was started with 8mg at 20 ml/hr. After all the underlying interventions, the patient got finally settled. Her chest

X-Ray was done which was within normal limits. Her vitals normalized with pulse -98/min and BP-118/80 mmHg, urine output of around 600ml, clear over 5hrs. Her labs were Hb – 8.4 TLC-13,500 Platelet -3.25 Sr. Na- 140 Sr Cl- 101 Sr. K- 4.2 Blood Urea – 33 Sr. Creatinine – 1.5 Total Bilirubin -0.8 SGOT-39 SGPT- 10 Cholesterol-156 Triglycerides-176 HDL-36. Her 2D ECHO was done which was suggestive of LVEF – 66% LVID(s)- 30mm LVID(d)- 48 Grade 1 Diastolic Dysfunction with Mild TR. A final diagnosis of Recurrent Supra Ventricular Tachycardia (SVT) with Peripartum Cardiomyopathy in a case of Post LSCS was finally made. After all the impending & mandatory interventions, patient was finally stabilized and vitally settled. Her labs were all reported to be normal. She was then started on tablet Ciplar,

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tablet Amiodarone and oral antibiotics and was then shifted from ICCU to ward for further monitoring. Eventually mother and baby both were discharged uneventfully. Personalized contraceptive counselling was done regarding IUCD contraception and was well explained about it. All the instructions regarding medications, diet, exercise and routine schedule was well explained to the patient and the relatives. Timely follow up was advised accordingly.

2. Discussion

Peripartum Cardiomyopathy is a rare disease with unknown cause. Diagnosis of PPCM is challenging and requires vigilance. Many postulate that it might be related to the cardiovascular stress of pregnancy or be an inflammatory response in pregnancy [3]. Multiparity, advanced maternal age, multifetal pregnancy, pregnancy induced hypertension, African ethnicity are some of the risk factors. Clinical features of PPCM include symptoms of congestive heart failure and signs include tachycardia, tachypnea, pulmonary rales etc. [4]

Diagnosis of PPCM can be made if it includes following criteria 1) development of cardiac failure in last month of pregnancy or within five months of delivery. 2) absence of an identifiable cause. 3) absence of recognizable heart disease before last month of pregnancy. 4) left ventricular dysfunction, ejection fraction of less than 45% or reduced shortening fraction. There are no specific laboratory abnormality findings for PPCM. However, other exclusionary laboratory studies should also be considered, including cardiac enzymes. Electrocardiographic findings can often be normal or might show some significant changes like sinus tachycardia, ST elevation, T wave abnormalities etc. Echocardiograms usually show decreased contractility and LV enlargement without hypertrophy. Supraventricular Tachycardia (SVT) is a tachyarrhythmia characterized by a heart rate above 120 bpm. [5] The increase in cardiac output and increase in resting heart rate during pregnancy along with other physiological changes which happen in pregnancy predispose women to SVT but its etiology still remains unknown and is said to be multifactorial [6]. A 12 lead ECG and an echocardiogram are usually sufficient to diagnose SVT. The effective management of SVT depends on presentation and trimester of pregnancy. Timing and mode of delivery are chosen based on maternal hemodynamic stability, obstetric indications, fetal conditions. The patient's cardiovascular benefit is the highest priority in making decision. The patients may present with hemodynamic instability resulting in more aggressive treatment. Mild cases

may be treated by simple vagal maneuvers which consist of carotid sinus massage, Valsalva maneuver. When vagal maneuvers fail, medical management becomes the preferred treatment of choice. Various drugs like adenosine, metoprolol, propranolol, diltiazem, digoxin, verapamil, amiodarone can be used according to the presenting gestational age during pregnancy or for postpartum cases. Amiodarone is one of the most commonly used anti-arrhythmic drug and is used for treatment of life threatening arrhythmias. It has effectively controlled the ventricular rate & converted to and maintained sinus rhythm in patients with atrial fibrillation and ventricular tachycardia. If still no response electrical cardioversion is the treatment of choice and is safest in all cases.

The treatment for PPCM is same as for congestive heart failure. These patients are also a high risk for thrombus formation; thus, anticoagulation should be considered. In addition, physical activity should be encouraged according to patients' tolerance. [7] Regardless of recovery, subsequent pregnancy is usually not recommended for these patients because PPCM recurs in more than 30% of subsequent pregnancies, which puts both mother and baby at risk [8]. The prognosis for women with PPCM appears to depend on the normalization of left ventricular size and function within six months after delivery. About half of the patients of PPCM recover without any complications. Adverse outcomes associated with PPCM include decompensated heart failure, thromboembolic complications, arrhythmias etc. An echocardiogram is usually repeated every six months to assess the recovery and ensure if any further management is required or not. [9] Therefore, early diagnosis is very important and women who develop symptoms of heart failure during pregnancy or shortly after delivery should be investigated for this condition.

Effective treatment reduces mortality rate and increases chances of complete recovery of ventricular systolic function. Thus, this was a rare case of Recurrent SVT with PPCM in a case of post LSCS which was encountered with intriguing features but eventually was managed by multidisciplinary approach.

3. Conclusion

Peripartum Cardiomyopathy is a rare disease of unknown cause that strikes women in the child bearing years. Diagnosis of PPCM is challenging and requires vigilance [10]. Once PPCM is detected, the primary goal of therapy is to alleviate symptoms of congestive heart failure

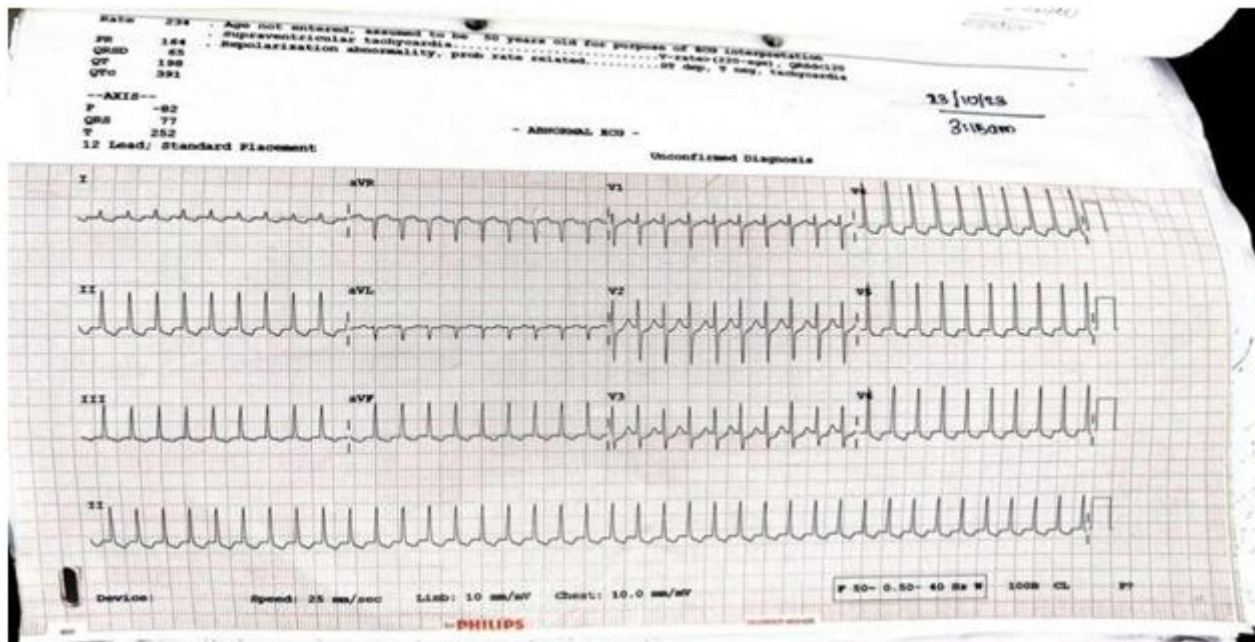
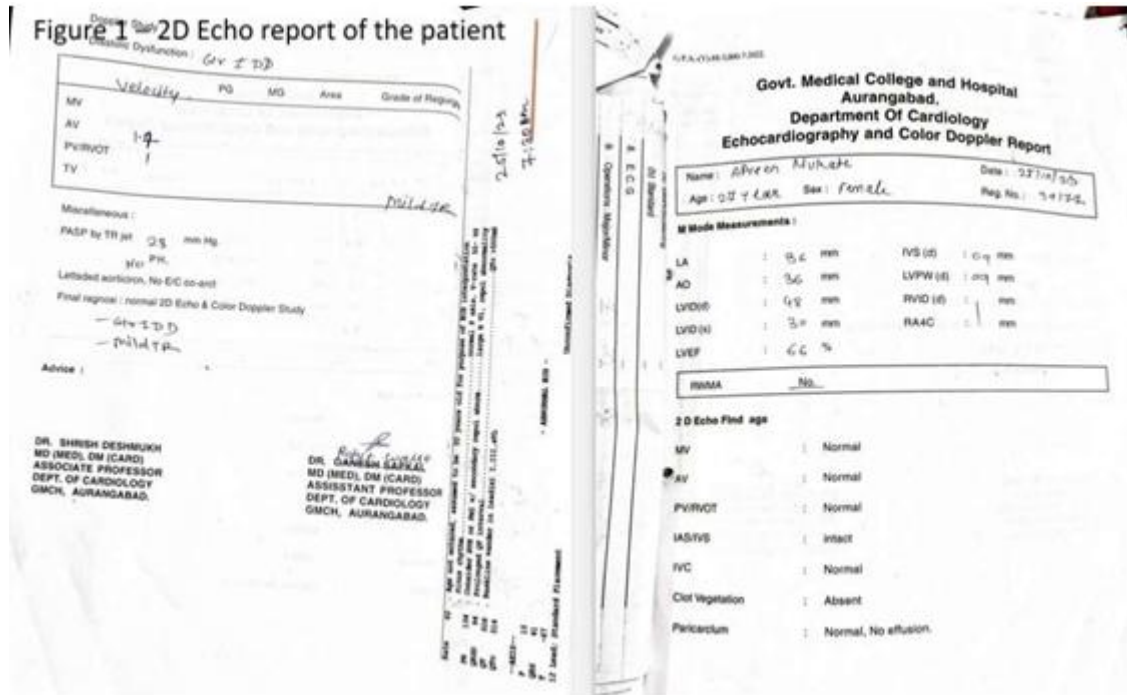


Figure 11: ECG suggestive of Supra Ventricular Tachycardia

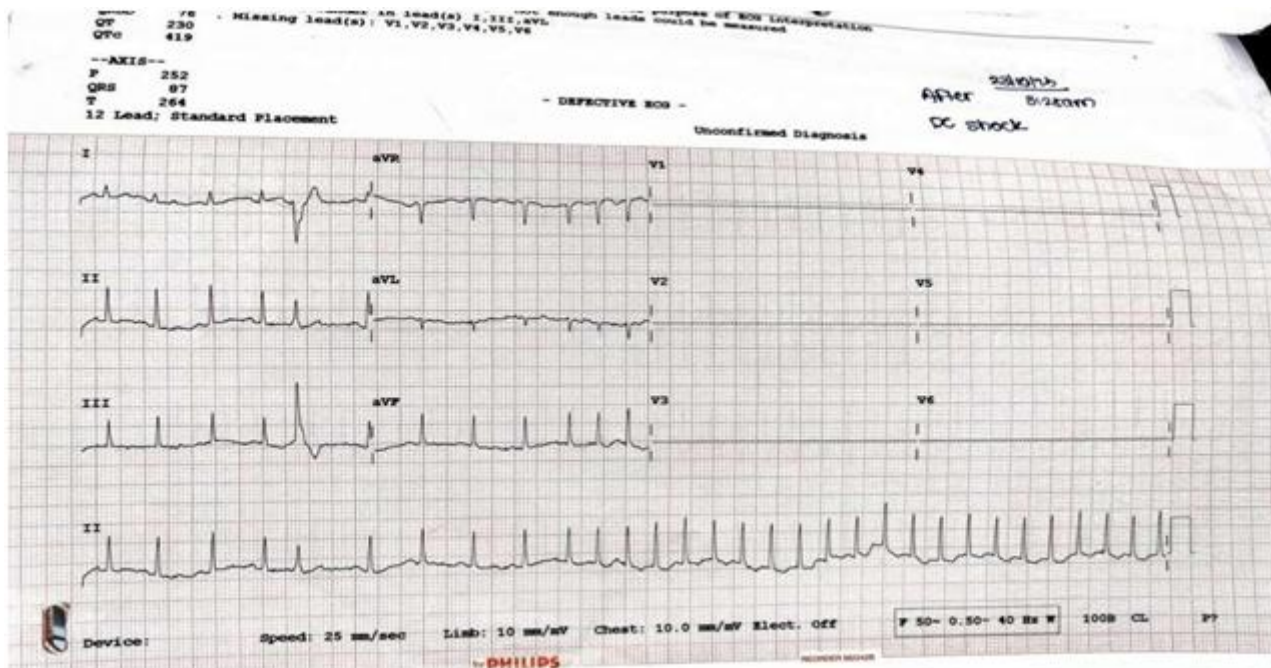


Figure 12: ECG after giving DC Shock

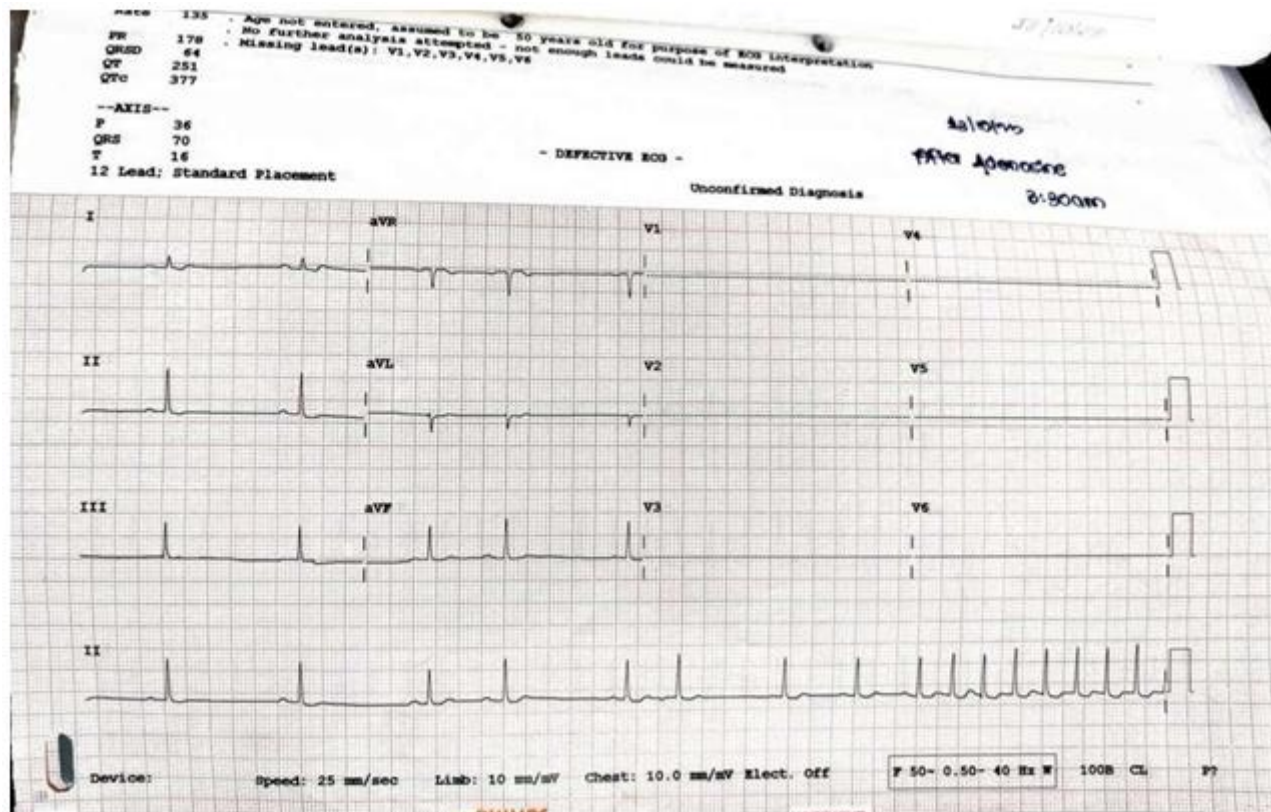


Figure 13: ECG after giving inj Adenosine

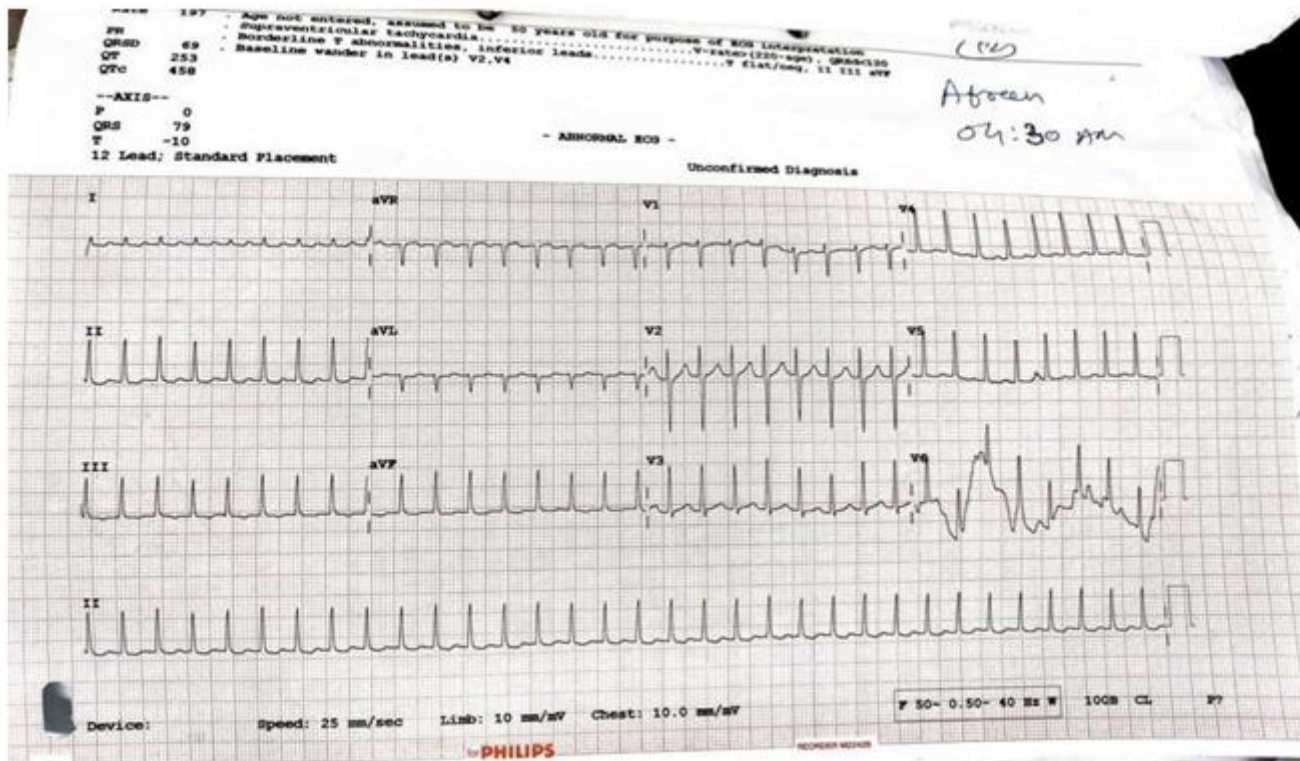


Figure 14: Repeat ECG after intervention

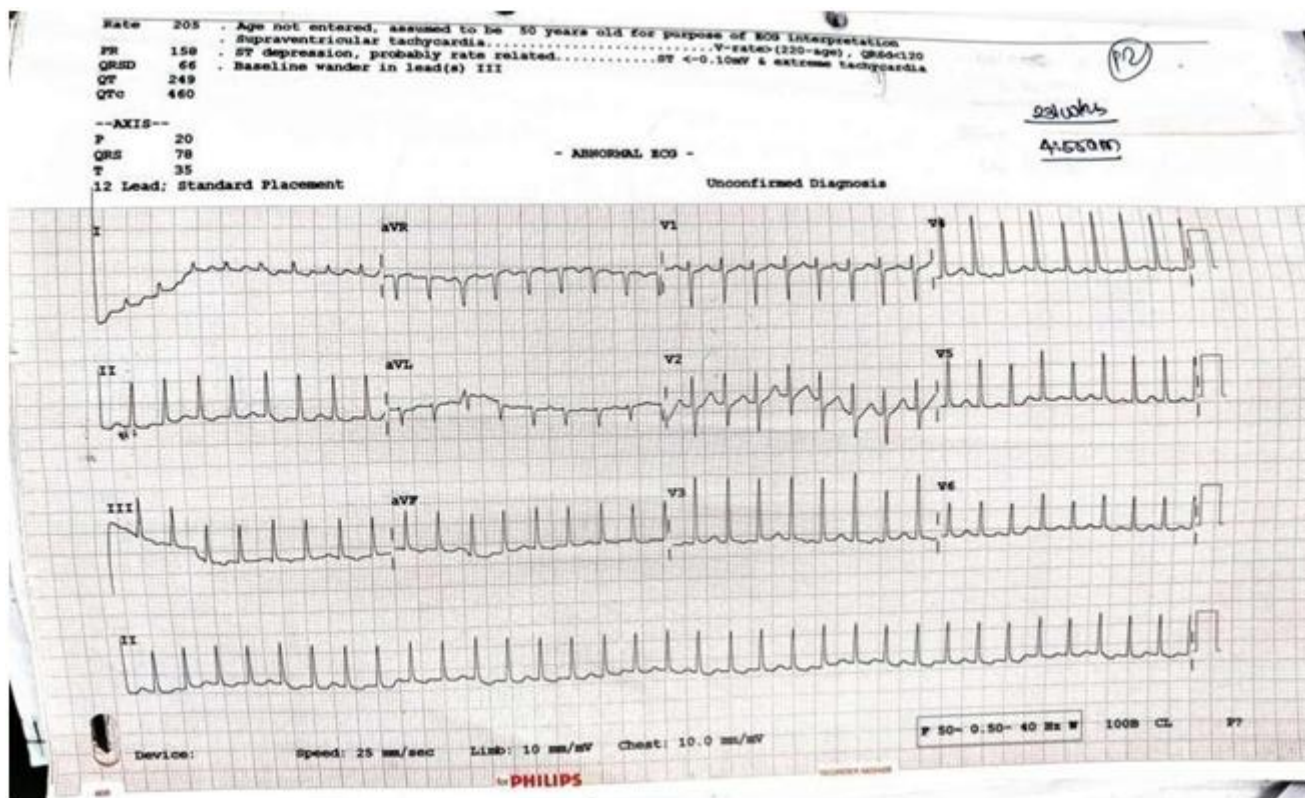


Figure 15: ECG Changes still suggestive of SVT

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