

Background

- Refractory tachyarrhythmia → significant challenge during pregnancy.
- Mortality and morbidity maternal death related to cardiovascular complications is increasing.

→ exact contribution of tachyarrhythmias **is unclear**.

- **Retrospective study:** cardiovascular cause of death: **arrhythmias** were immediately the underlying cause : 10,7% (1)

Pregnancy  increase in the incidence of arrhythmias: more common **PACs** and **PVCs**

- Underlying mechanisms:
 - Increase in blood volume with atrial distension
 - Increase in catecholamines especially during labor
 - Hormonal changes.
- Dexmedetomidine: Selective Alpha-2 agonist **Reduction of stress response including labor and surgical**
Multiple studies and case reports highlight efficacy in a wide spectrum of scenarios.
Use during cesarean deliveries has been widely reported but safety profile not fully defined yet
- Dexmedetomidine and tachyarrhythmias? Critically ill patients have a decreased incidence of Ventricular arrhythmias.
Current investigations are studying the antiarrhythmic effect of dexmedetomidine

CASE REPORT

- 33 yo parturient: - Genetically confirmed HCM.
 - Recurrent and refractory atrial flutter and atrial fibrillation despite multiple ablations
 - At 26 weeks gestation, tachyarrhythmia refractory to bisoprolol and diltiazem, requiring a 9-day admission to Cardiac ICU
 - Eventually stabilized with a combination of **propranolol and digoxin**.
 - Anticoagulation initiated with Tinzaparin

- Echocardiography at the time revealed global hypokinesia with a progressive deterioration in LVEF : 48% → 43%.
- **Multidisciplinary team meeting**: decision to proceed with the C section at 36 Weeks.

- Csection: Setup: Arterial line, defibrillator pads, 2 large bore PIV.
- On presentation to the OR: **HR : 150 bpm**, BP: 124/75 mmHg,
No crackles, patient able to lie flat.

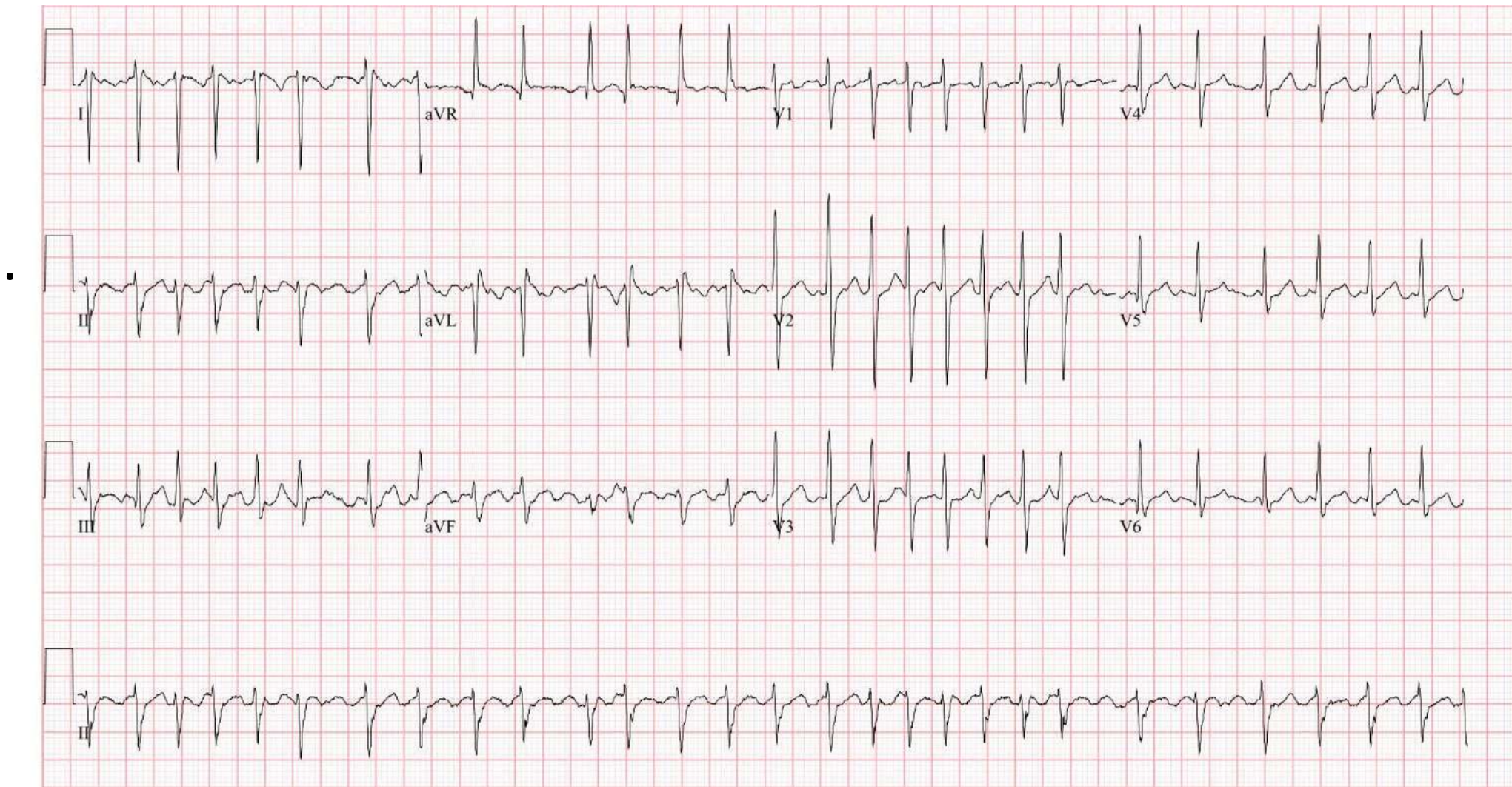


Fig 1: Patient's ECG on admission

- Plan for Combined spinal epidural : Spinal 3,25 mg of hyperbaric bupivacaine, 100 mcg morphine and 15 mcg of fentanyl.
Epidural slowly titrated after
- Dexmedetomidine IV infusion initiated before the neuraxial block: **0,2 mcg/Kg/hr**
- Decrease in HR to **110 bpm achieved** and maintained it throughout the procedure. We noted a slight decrease in BP counterbalanced by an norepinephrine infusion: 4mcg/min and also after delivery with 50 mcg of carbetocin.

Uneventful C section: patient tolerated well the procedure and transferred in stable condition to the Cardiac ICU where she recovered

DISCUSSION

- **Tachyarrhythmias**: Refractory tachyarrhythmias → Significant challenge throughout pregnancy and delivery.
Incidence within the parturient population **0,2%**.
Increases with high risk pregnancies especially **Hypertensive disorders**(1).

Careful Hemodynamic management: Prevention of arrhythmias (1) + Rate control

- **Dexmedetomidine**: Safety profile: many reports of use during cesarean deliveries, IV, IT and Epidural
Reported effects: Light sedation , analgesia and anxiolysis (2)
Reduces tachycardia as well as severity of tachyarrhythmias but can cause episodes of bradycardia and hypotension, preventable with careful titration. (3)
Studies needed to complete the safety profile for cardiac parturients undergoing cesarean delivery
- **Multidisciplinary team** discussion of such cases is of utmost importance.

References:

- 1) Yeo, Y, San, B, Mee, X. et al. Risk of Stillbirth and Preterm Birth in Cardiac Arrhythmias During Pregnancy. *J Am Coll Cardiol EP*. 2025 Jul, 11 (7) 1595–1603.
- 2) M.S. Douglas, L.J. Soloniuk, J. Jones, R. Derderian, C. Baker, G. Stier, Intravenous dexmedetomidine use in obstetric anesthesia: a focused review, *International Journal of Obstetric Anesthesia*, Volume 62, 2025.
- 3) Armstrong S, Berger A, Zec S. Maternal hemodynamic effects associated with intravenous and neuraxial dexmedetomidine during labor and cesarean delivery: a single center retrospective study (2021–2024). *International Journal of Obstetric Anesthesia*, 2025.

