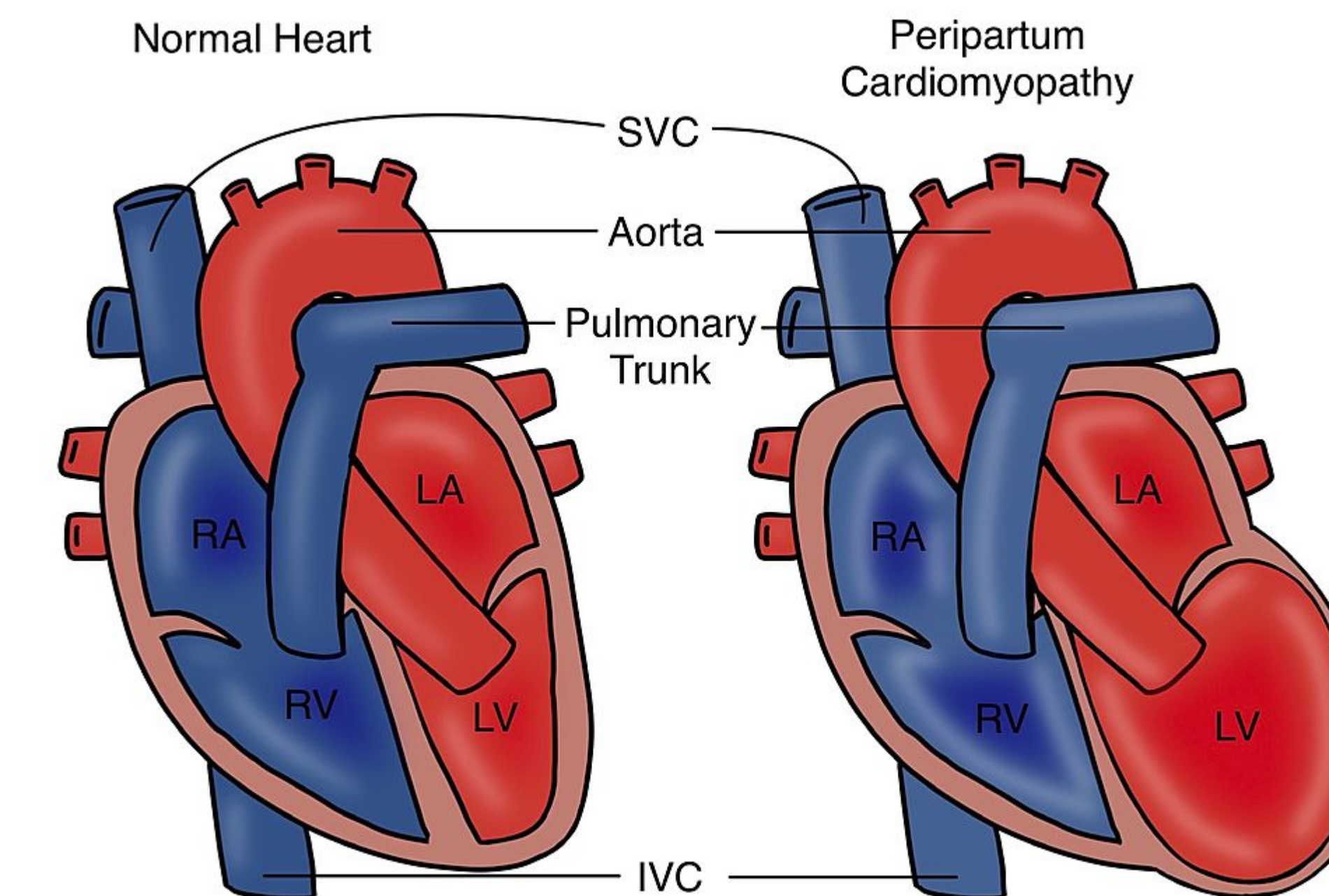


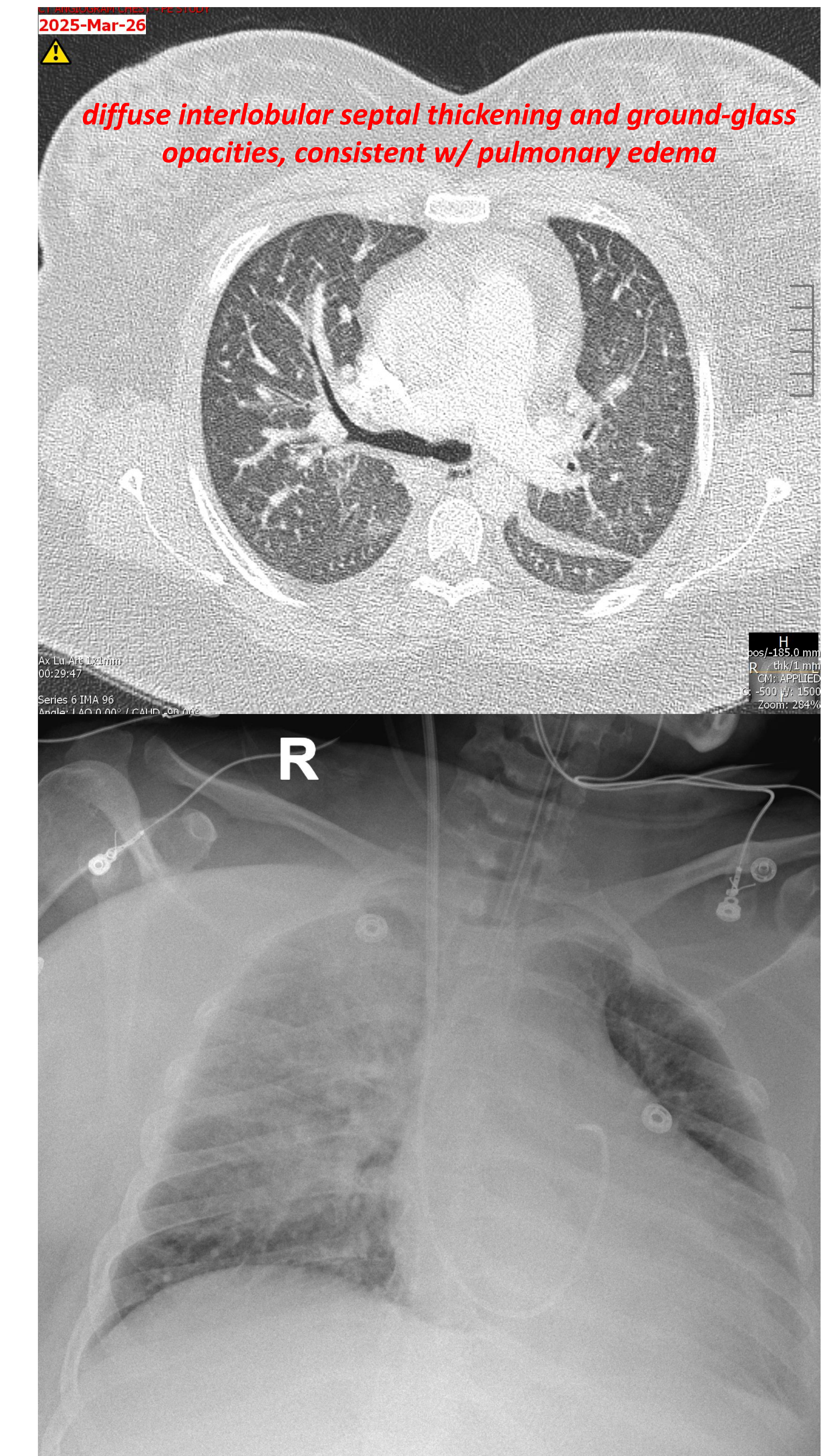
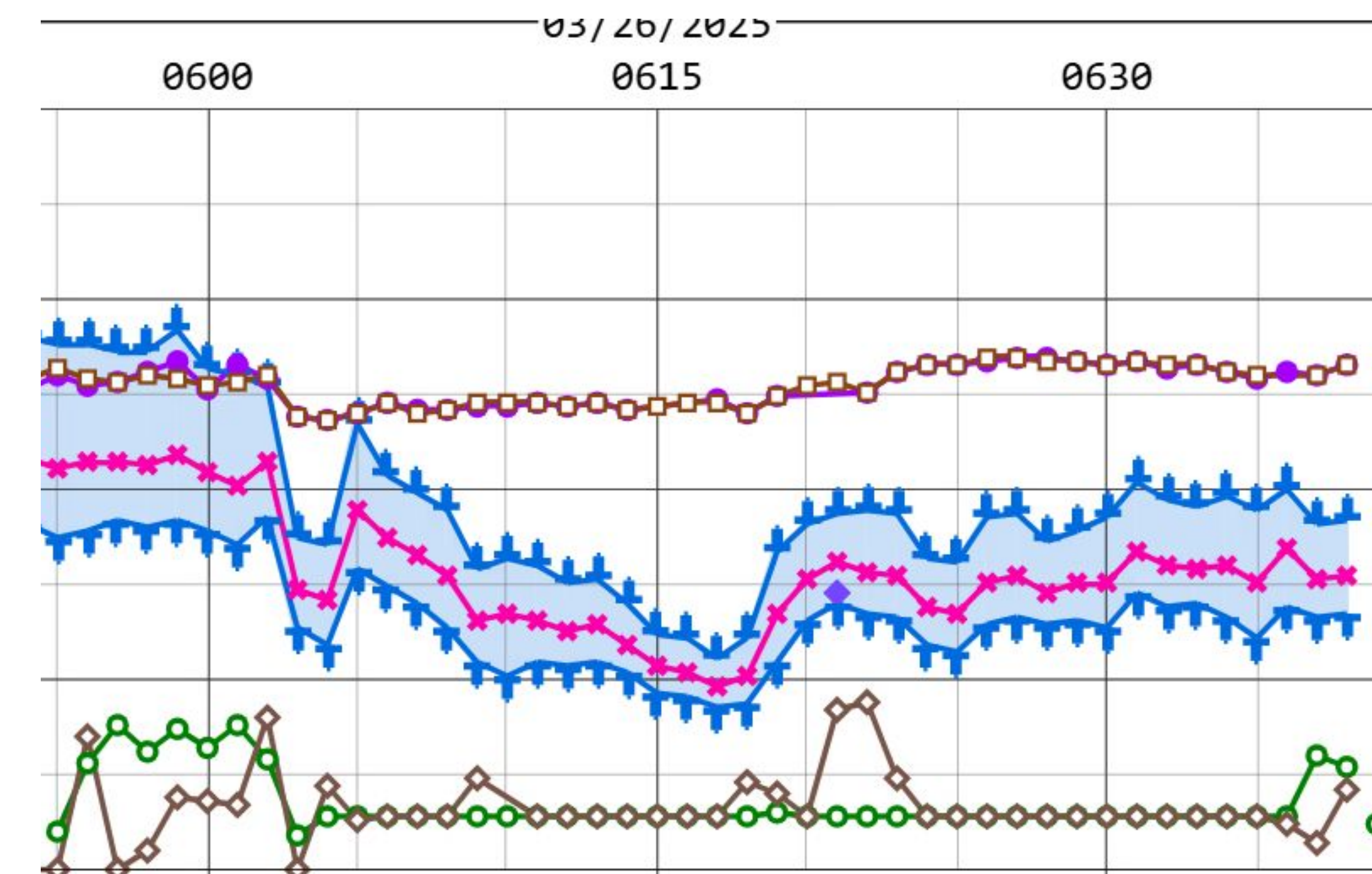
BACKGROUND INFORMATION

- Peripartum Cardiomyopathy (PPCM) was first defined in the 1970s → onset of new cardiomyopathy within in the last month of pregnancy or within the first 5 months postpartum and occurring in those without preexisting heart disease; echocardiography revealing for LVEF <45%
- Redefined by the working group on PPCM from the heart failure association of the European Society of Cardiology → time frame in original definition was arbitrary and led to underdiagnosis
 - Defined as idiopathic, manifesting with **HF secondary to LV systolic dysfunction toward end of pregnancy or in months following delivery when no other cause is found and LVEF <45%** → moreso a “*diagnosis of exclusion*”
 - Most diagnoses are made in postpartum period; only about 10% or less occur at the end of pregnancy
- Accounts for ~8-10% of pregnancy related deaths overall
- Etiology is not well understood, though likely related to myocarditis secondary to an autoimmune/inflammatory response and oxidative stress
- Risk factors for development:
 - African American ethnicity
 - Regional disparity found in Haitian (1 in 300) and South African (1 in 1000)
 - Age >35 years
 - Multifetal gestation
 - Multiparity
 - Obesity
 - Gestational hypertension/preeclampsia spectrum
- End stage HF results in 10-23% of women; recovery >50% EF is seen in 35-50% of women
 - Predictors of recovery: Caucasian, LVEF >30%, LV end-diastolic diameter <5.5cm, postpartum diagnosis
 - Predictors of **LACK OF** recovery: LVEF <30%, LV end-diastolic diameter >5.6cm, presence of LV thrombus, African American
 - Recovery usually occurs between 2-6 months postpartum, but can be as late as 48 months
- Future pregnancies are NOT recommended, especially in those without recovering EF



CASE PRESENTATION

- **24 y/o G1P0 Caucasian female at 33w4d, PPROM**
- PMHx: bicuspid aortic valve since childhood (with normal EF and 1-2+ AR), gestational hypertension, obesity (BMI 40), anxiety/depression
- Prior to presentation: ROM, also admitted with history of worsening SOB for past few weeks
- Within a few hours of admission: acutely worsened SOB, O2 requirement, chest pressure, sinus tachycardia into 130-140s
- CTA chest negative for PE, signs of pulmonary edema with elevated pro-BNP on labs
- Urgent C-section under general anesthesia with pre-induction arterial line, etomidate for induction. Push-dose epinephrine required post-induction for hypotension as patient unresponsive to phenylephrine.
- Otherwise uneventful C-section, remained intubated and taken to ICU
- Post-op TTE: **EF 10-14% with global hypokinesis**
- Treated for suspected peripartum cardiomyopathy with vasopressors, inhaled nitric oxide, and diuresis
- Extubated on post-op day 11, started on GDMT and discharged home 2 days later with a life vest
- Has since had follow up TTEs and cardiac MRI with improvement in EF to only 30-34% ~6 months later
- Has no further plans for additional pregnancies (IUD with plans for salpingectomy, husband vasectomy)





Peripartum Cardiomyopathy: A Rare Cause of Acute Heart Failure in Pregnancy

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TEACHING POINTS/DISCUSSION

- After review of case and clinical course, the diagnosis of PPCM is most likely Other considered etiologies possible include exacerbation of valvular heart disease cardiomyopathy during pregnancy vs familial cardiomyopathy (less likely).
- Treatment/management from perioperative anesthesia perspective:
 - Vaginal delivery is preferred if stable – need aggressive pain management to control HR/BP. If condition declines at any point, c-section and invasive monitoring should be considered (arterial line and central line with CVP monitoring recommended)
 - Early epidural, initial slower titration to avoid hemodynamic swings
 - Intrathecal morphine via CSE or continuous spinal technique
 - Planned c-section is preferred for more critically ill/those needing inotropic therapy
 - Epidural is usually best option
 - Single shot spinal not recommended due to rapid hemodynamic changes
 - Neuraxial may not be able to be possible at all if on anticoagulation
 - If GETA is required, a cardiac induction (etomidate) and high dose opioids is recommended
 - Benefit of GETA is the ability for TEE monitoring
 - Vasopressor of choice = epinephrine
- Overall anesthetic goals:
 - Avoidance of drug induced myocardial depression
 - Maintenance of normovolemia
 - Prevention of increased or rapidly decreased afterload
 - Blunting of sympathetic response induced from pain/anxiety

Management Options for PPCM		
	During Pregnancy: • Beta-blockers, loop diuretics, hydralazine/isosorbide dinitrate, digoxin, low-molecular-weight heparin • (No ACE/ARB/aldosterone receptor antagonists) • MCS for severe heart failure/cardiogenic shock • Consider early delivery if unstable	
		Delivery: • Plan ahead with a Cardio-Obstetrics Team • If unstable, consider hemodynamic monitoring and optimization • Caution for fluid overload, especially after delivery
	After Pregnancy: • Heart failure management. Beta-blockers, enalapril, and spironolactone are compatible with breastfeeding. • Anticoagulation for LV thrombus; consider if severe LV dysfunction (LVEF <35%) • Consider a wearable cardioverter/defibrillator if severe LV dysfunction • Discuss Contraception	

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References