

Management of Pericardial Effusion in a Parturient Presenting with Hypertensive Crisis and Respiratory Failure

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Background:

- Pericardial effusions affect 15%, 19.2%, and 40% of pregnant women in the first, second, and third trimesters, respectively.¹ About 40% of pregnant women develop a clinically silent hydropericardium by their third trimester.² A possible mechanism is the increase in salt and water retention with higher mean weight gain in the pregnant state.³ Other important inciting factors are hypertensive diseases and connective tissue diseases.¹ While large effusions may be well-tolerated in pregnancy due to increased blood volume,² they have the potential to progress to cardiac tamponade. In the parturient with a pericardial effusion presenting with impending respiratory failure, early diagnosis and preoperative optimization are crucial due to the possibility of an emergency delivery.



Case:

A 32-year-old morbidly obese G2P1 with unknown pregnancy presented at 35w with elevated blood pressures concerning for superimposed preeclampsia with severe features and increased work of breathing in the setting of COVID-19. CXR showed pulmonary edema, and serial TTEs revealed a moderate pericardial effusion with early signs of tamponade such as interventricular dependence and right atrial inversion. Despite aggressive management with a nicardipine drip, diuresis, and targeted antimicrobial therapy for both COVID and bacterial pneumonia, her respiratory status continued to deteriorate. She required emergent cesarean section for fetal concerns the following day.



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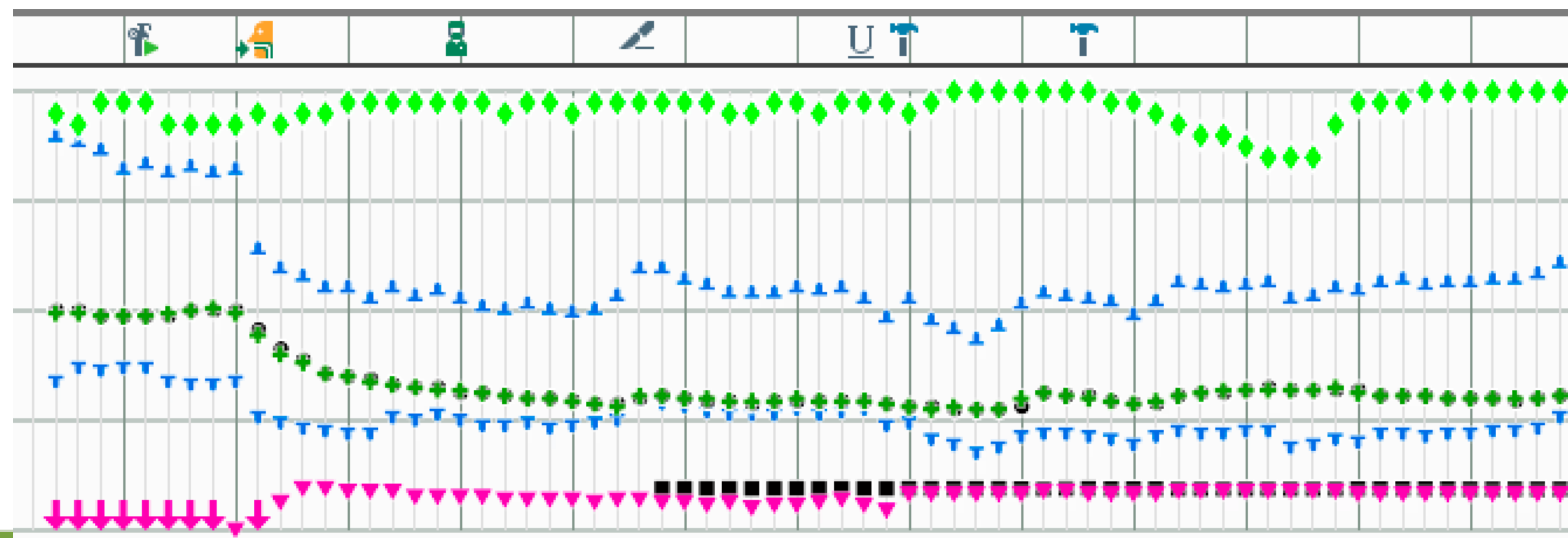
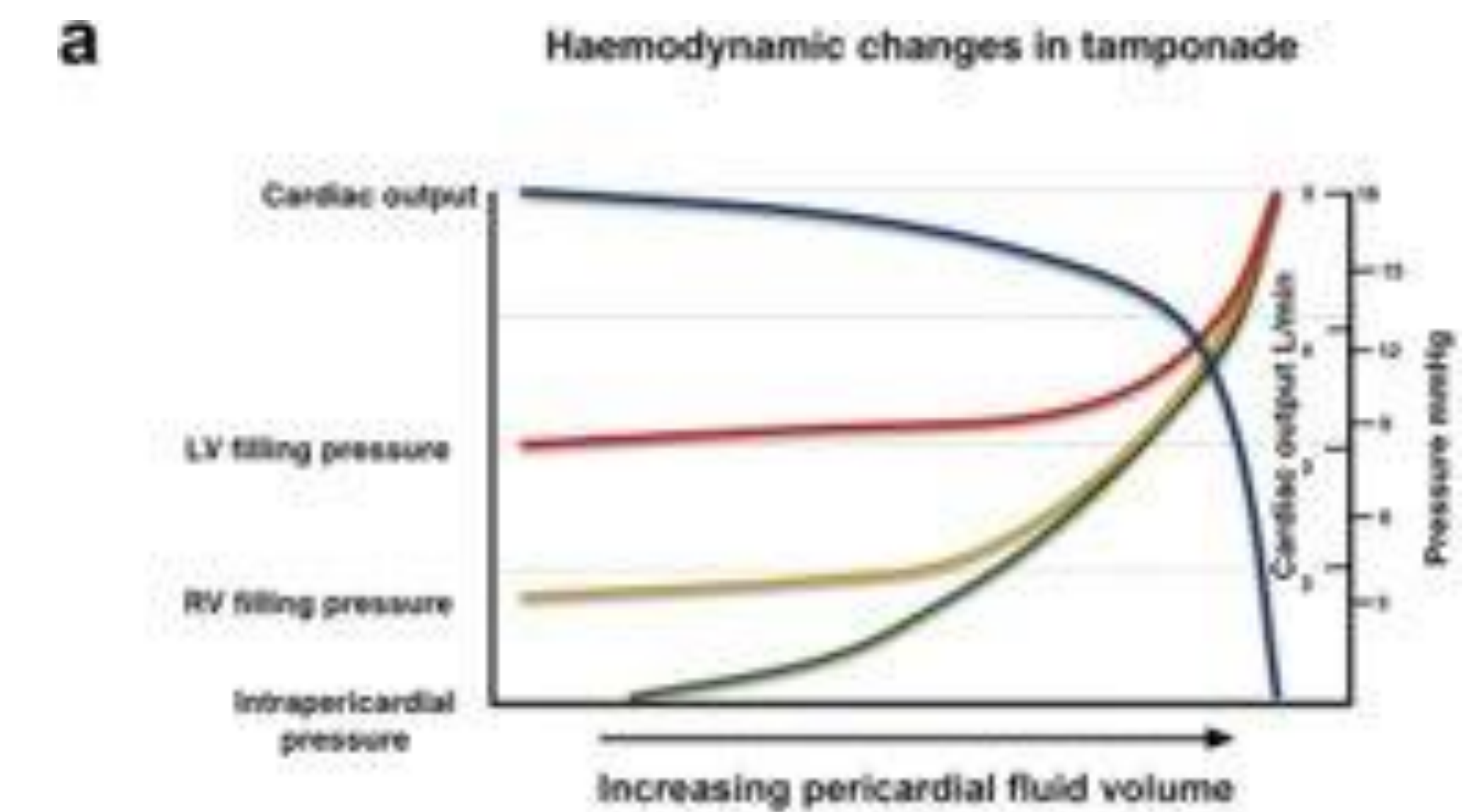
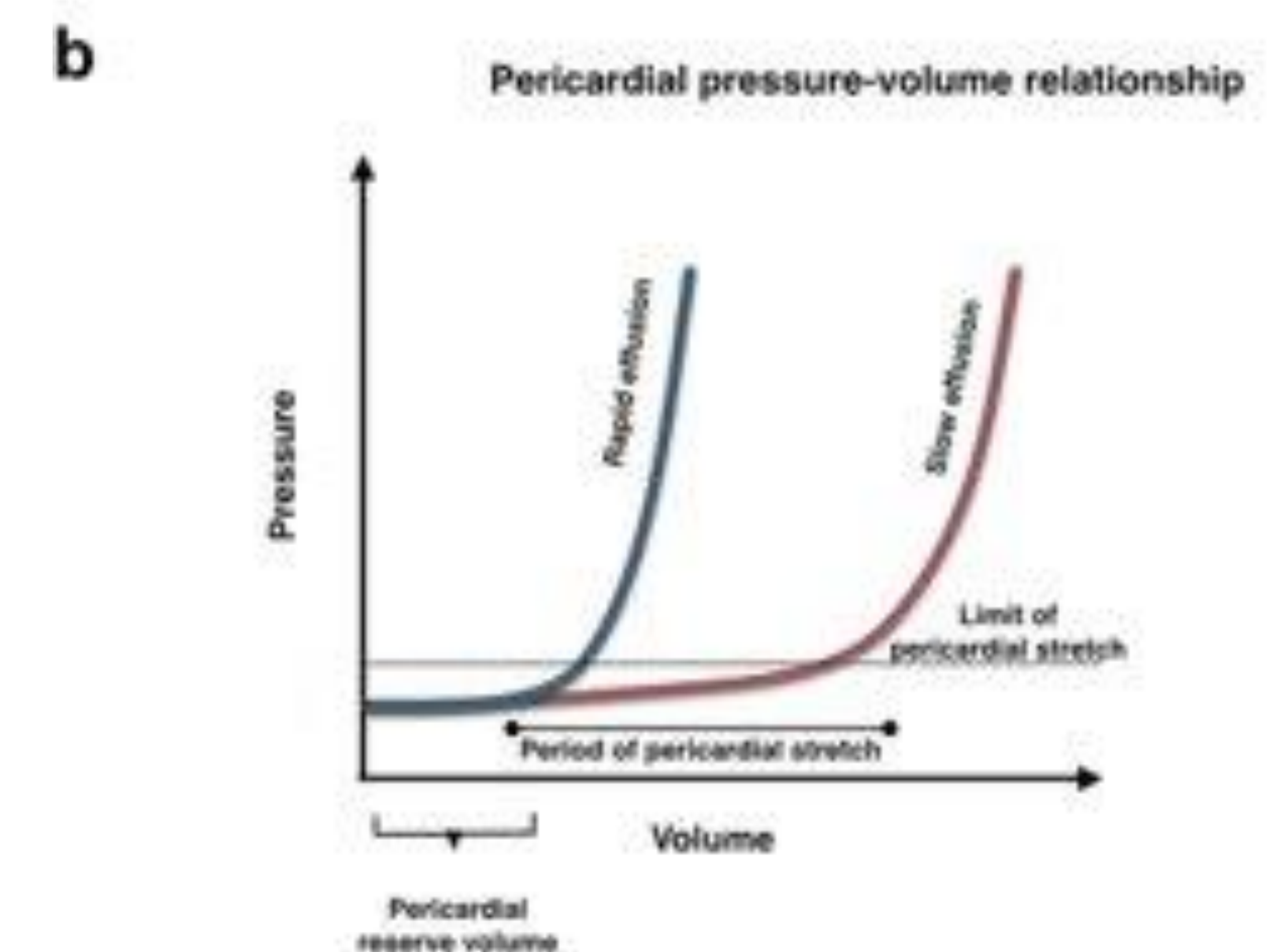
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Management:

After discontinuation of nicardipine, general anesthesia was induced with 100 mg propofol and 160 mg succinylcholine and maintained with propofol TIVA at 100 mcg/kg/min. Hemodynamics were maintained with small boluses of phenylephrine and ephedrine. Positive pressure ventilation was provided with a TV of 450, RR of 14, PEEP of 7, and FiO₂ of 100% with minimal peak inspiratory pressures. The patient returned to the CCU intubated postoperatively. She was extubated on postpartum day 6 after treatment for ARDS, presumably COVID-related, and was discharged on postpartum day 12. She continues to undergo a workup for secondary hypertension with a normal renal ultrasound and negative urine metanephrines to date.



Tamponade Physiology⁴

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Conclusion:

This case demonstrates the importance of preoperative workup as well as a multidisciplinary approach in a parturient with a complex multisystem condition of unclear etiology with impending respiratory failure. The success of this patient's emergent cesarean section was strongly tied to the appropriate workup of this patient (CXR, EKG, TTE, RHC) as well as careful monitoring (arterial line, PA catheter) and conservative management (nicardipine, magnesium, insulin infusions). Careful multidisciplinary coordination among cardiology, obstetrics, and anesthesiology followed to manage the patient's respiratory distress and hypertension prior to surgery. Intraoperatively, the anesthesiology team ensured adequate preload, heart rate, and contractility through careful titration of propofol and vasopressors. Care was taken to avoid large tidal volumes and inspiratory pressures to maintain venous return given the concern for evolving tamponade. The patient was delivered in a cardiac OR with TEE and ECMO immediately available in the event of hemodynamic shifts. The patient was delivered safely due to strong communication and preparation in a multidisciplinary fashion.

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