Right Heart, Wrong Time: Severe Tricuspid Regurgitation During Labor

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Background

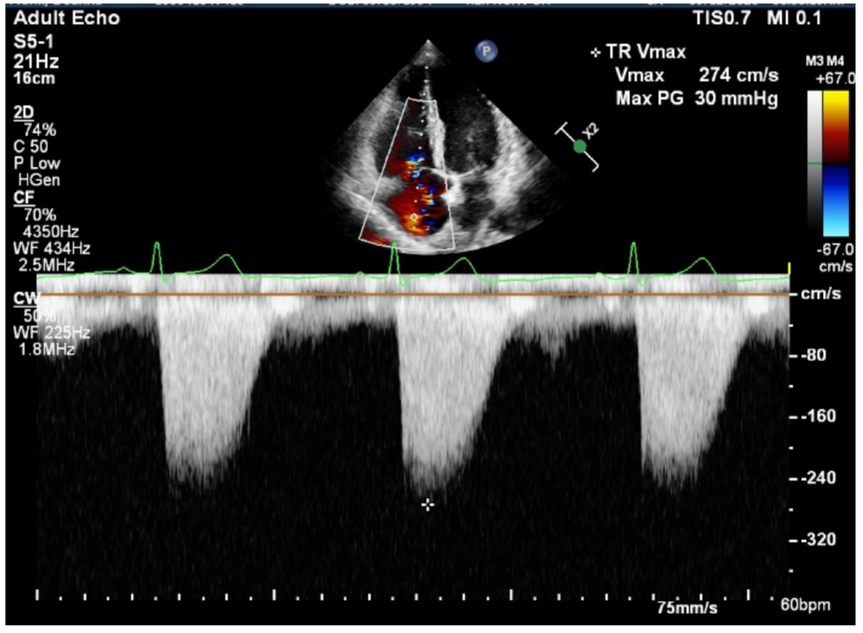
- Tricuspid regurgitation (TR) is a common valvulopathy that may be encountered in pregnancy.[1]
- Physiologic increases in blood volume can lead to elevated preload and ventricular distension, which can impair leaflet coaptation and result in regurgitant flow.[2,3]
- Primary TR due to intrinsic leaflet pathology may cause peripheral edema, ascites, and right ventricular failure.

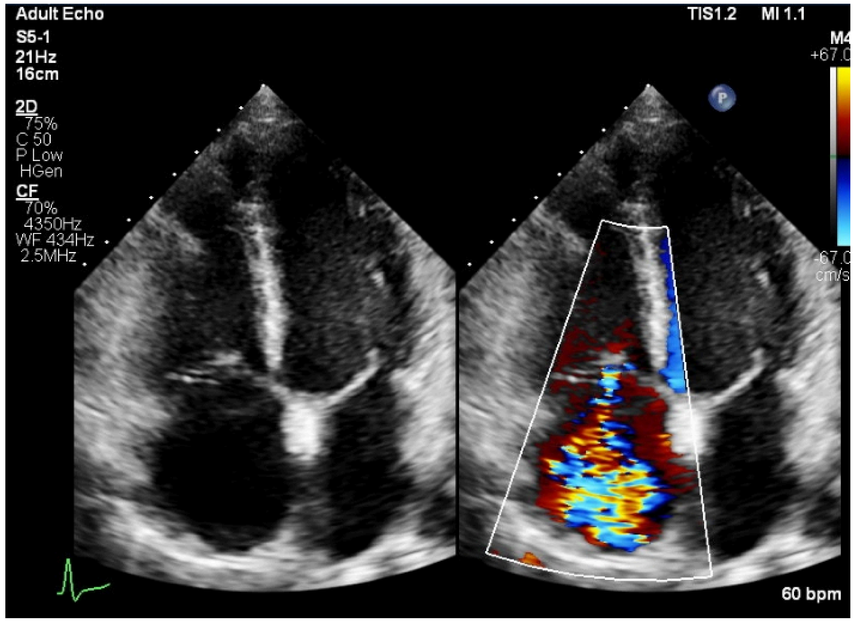
Stage	Definition	Valve Hemodynamics	Hemodynamic Consequences	Clinical Symptoms and Presentation
B	Progressive TR	▪ Central jet <50% RA ▪ Vena contracta width <0.7 cm ▪ ERO <0.40 cm^2 ▪ Regurgitant volume <45 mL	▪ None	▪ None
C	Asymptomatic severe TR	▪ Central jet ≥50% RA ▪ Vena contracta width ≥0.7 cm ▪ ERO ≥0.40 cm^2 ▪ Regurgitant volume ≥45 mL ▪ Dense continuous wave signal with triangular shape ▪ Hepatic vein systolic flow reversal	▪ Dilated RV and RA ▪ Elevated RA with "c-V" wave	▪ Elevated venous pressure ▪ No symptoms
D	Symptomatic severe TR	▪ Central jet ≥50% RA ▪ Vena contracta width ≥0.7 cm ▪ ERO ≥0.40 cm^2 ▪ Regurgitant volume ≥45 mL ▪ Dense continuous wave signal with triangular shape ▪ Hepatic vein systolic flow reversal	▪ Dilated RV and RA ▪ Elevated RA with "c-V" wave	▪ Elevated venous pressure ▪ Dyspnea on exertion, fatigue, ascites, edema

1. Writing Committee Members, Otto CM, Nishimura RA, Bonow RO, Carabello BA, Erwin III JP, Gentile F, Jneid H, Krieger EV, Mack M, McLeod C. 2020 ACC/AHA guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Journal of the American College of Cardiology. 2021 Feb 2;77(4):e25-197.
2. Zoghbi WA, Adams D, Bonow RO, Enriquez-Sarano M, Foster E, Grayburn PA, Hahn RT, Han Y, Hung J, Lang RM, Little SH. Recommendations for noninvasive evaluation of native valvular regurgitation: a report from the American Society of Echocardiography developed in collaboration with the Society for Cardiovascular Magnetic Resonance. Journal of the American Society of Echocardiography. 2017 Apr 1;30(4):303-71.
3. Pfaller B, Dave Javier A, Grewal J, Gabarin N, Colman J, Kiess M, Wald RM, Sermer M, Siu SC, Silversides CK. Risk associated with valvular regurgitation during pregnancy. Journal of the American College of Cardiology. 2021 Jun 1;77(21):2656-64.

Case Presentation

- A 31-year-old G4P2103 at 39 weeks admitted for IOL in the setting of severe TR and right ventricular dilation.
  - Hx of endocarditis in 2016 and 2024, neither treated with a complete antibiotic course.
  - During pregnancy, sx included intermittent chest pain, dyspnea, and mild lower extremity edema.
  - TTE demonstrated preserved left ventricular function, mild right ventricular dilation, severe TR (**maximum velocity 2.7 m/s, vena contracta ~7mm**), and mild pulmonary hypertension (PASP 38 mmHg).
- Epidural analgesia was placed without complication, and labor and postpartum recovery were uneventful.
  - Load: 15ml of 50mcg fentanyl + bupivacaine 0.125%
  - Infusion: fentanyl-bupivacaine (PF) 2 mcg/mL-0.0625% epidural





Teaching Points

- Management of severe TR depends on symptom burden and regurgitant severity.[2]
- Treatment focuses on maintaining euvolemia and avoiding significant changes in hemodynamics and pulmonary vascular resistance.
- Loop and potassium-sparing diuretics are first-line therapy for peripheral edema.
- Neuraxial anesthesia remains appropriate, with precautions to prevent sympathectomy-associated bradycardia that may exacerbate regurgitant flow.
- Multidisciplinary meetings with Obstetric and Cardiothoracic Anesthesia teams can be beneficial in establishing treatment plan.