

Background

- The fetal sinus venosus, which diverts blood from the inferior vena cava to the left atrium during fetal circulation, can persist as an embryologic remnant known as the eustachian valve in adult hearts.
- In rare occurrences, this embryonic remnant can harbor vegetations, resulting in eustachian valve endocarditis (EVE).
- To the best of our knowledge, there are only 38 cases reported from 1986 to 2020.
- We aim to discuss a rare presentation and diagnostic challenge of eustachian valve endocarditis in a drug-injecting patient.

Case Presentation

A 40-year-old female who injects drugs presented with confusion, reduced consciousness, and lower back pain. Physical examination revealed fever (Tmax 102.90°F), tachycardia (HR 107), and hypoxia (requiring 2 L NC). The patient was noted to have pinpoint pupils but equal and reactive. Cardiovascular examination exhibited tachycardia with a regular rhythm, normal heart sounds, and no murmurs or gallops. Pulmonary exam with normal pulmonary effort, normal breath sounds, no wheezing or rales. No localized lumbar tenderness. No enlarged painful or erythematous joints were noted. Healed injection site marks were noted on her lower extremities, and no wound or ulceration was appreciated. All extremities were warm and dry. Laboratory results indicated leukocytosis (11.68 k/mcL), and urine toxicology was positive for fentanyl, cocaine, and opiate. Blood cultures grew MRSA in four bottles. The patient was treated with intravenous vancomycin. TTE revealed no vegetation, while TEE identified small vegetation on the eustachian valve (Figure 1).

The patient was diagnosed with MRSA bacteremia in the setting of eustachian valve endocarditis. The source of bacteremia was thoroughly investigated. MRI lumbar spine was unremarkable for infection or abscess. Given back pain and inconclusive imaging, hip arthrocentesis was performed, which was unremarkable. Serial cultures were obtained every 48 hours and cleared on day 8. Surgical intervention was not recommended by CT surgery. She was medically managed with IV Vancomycin for six weeks.

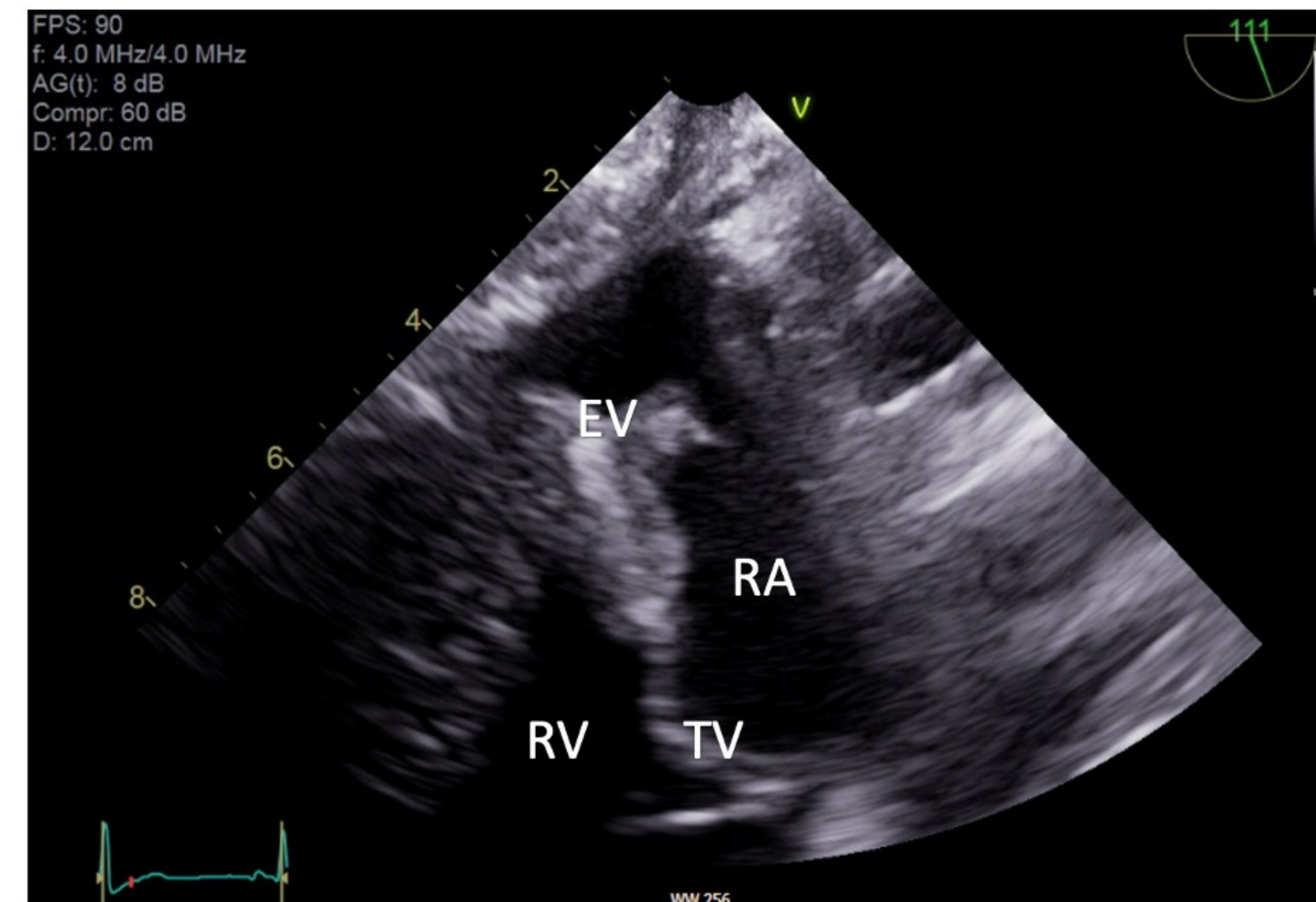


Figure 1: Transesophageal Echocardiogram showing a thickened tricuspid valve (TV) located between the right atrium (RA) and right ventricle (RV). Projecting into the RA is an eustachian valve (EV) with an irregular thickening and an independent mobile vegetation suggesting endocarditis.

Discussion

- Eustachian valve endocarditis, although exceedingly rare, necessitates consideration in individuals with Staphylococcus aureus bacteremia, particularly among those at risk for right-sided endocarditis, including intravenous drug users or those with ports, central lines, or cardiac devices.
- A thorough echocardiographic assessment is vital to prevent overlooking the eustachian valve's involvement.
- Although the management of eustachian endocarditis is similar to native valve endocarditis, failure to diagnose EVE can result in inadequate treatment duration if an infection is attributed to superficial causes, such as skin infections, which can be common in this patient population.

References

1. Alreja G, Lotfi A. Eustachian valve endocarditis: rare case reports and review of literature. *J Cardiovasc Dis Res.* 2011;2:181-185.
2. Edwards AD, Vickers MA, Morgan CJ. Infective endocarditis affecting the eustachian valve. *Br Heart J.* 1986;56:561-562.
3. Hasan S, Bianco A, Faluk M, Nasser H. Eustachian valve endocarditis: a case report on an under diagnosed entity. *J Community Hosp Intern Med Perspect.* 2020;10(2):145-148. Published 2020 Mar 3. doi:10.1080/20009666.2020.1742474
4. Pellicelli AM, Pino P, Terranova A, D'Ambrosio C, Soccorsi F. Eustachian valve endocarditis: A rare localization of right side endocarditis. A case report and review of the literature. *Cardiovascular Ultrasound.* 2005;3:30. doi:10.1186/1476-7120-3-30
5. Rawal H, Joshi U, Parekh J. Eustachian and Tricuspid Valve Endocarditis: A Rare Consequence of the Automatic Implantable Cardioverter-Defibrillator Placement. *Cureus.* 2021;13(12):e20740. doi:10.7759/cureus.20740