

Double Valve Endocarditis by Streptococcus anginosus of Unknown Origin

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INTRODUCTION

- Infective endocarditis (IE) is a life-threatening infection of the endocardial surface involving native or prosthetic valves.
- Streptococcus anginosus (SAG) causes purulent infections, aggressive tissue invasion, and abscess formation, but rarely endocarditis.
- SAG infections are underrepresented in literature due to it being formerly generalized under the viridans Streptococci umbrella.
- SAG is an emerging opportunistic pathogen, and modern molecular diagnostic techniques are still being developed for better identification to direct treatment.
- We present the case of double valve IE by SAG in a patient with a bicuspid aortic valve, complicated by severe cardiomyopathy.

CASE OVERVIEW

Patient

- A 40-year-old male with history of hypertension and anxiety not on any medication

Symptoms

- 2 weeks of intermittent night sweats, dyspnea on exertion, and orthopnea
- 20 lbs unintentional weight gain

Other history

- Family history: lupus (mother)
- No recent travel or sick contact
- Drinks beers occasionally
- Does not use tobacco or illicit drugs

Vitals

- Afebrile
- Blood pressure 130/63
- Heart rate 117
- Respiratory rate 20
- Saturating 100% on room air

Physical exam

- Patient is visibly anxious
- Heart tachycardic, regular rhythm; no murmur/rub/gallop
- Jugular venous distension
- Bilateral 1+ pitting pretibial edema

EKG

- Sinus tachycardia, heart rate 118, normal axis, 1st degree AV block, no ischemic changes

Laboratory data

- Leukocytosis 13.5
- Elevated HS Troponin 83 and 80
- ProBNP > 20K
- D-dimer > 2600
- AST 2048, ALT 1807, ALP 167

Imaging

- Chest X-ray: cardiomegaly, no infiltrate or pneumothorax
- CT angiography of the chest: negative for pulmonary embolism, small nonspecific pleural and pericardial effusions
- CT abdomen and pelvis with contrast: splenomegaly with suspected splenic infarct

CLINICAL COURSE

- Patient was admitted for suspected new onset heart failure with acute exacerbation.
- A transthoracic echocardiogram (TTE) found vegetation of the noncoronary cusp of the aortic valve (Figure 1), moderate aortic insufficiency, ejection fraction was reduced at 25% with global hypokinesis.
- Left heart catheterization showed patent coronary arteries, ruling out ischemia as a cause of his heart failure.
- Patient continued to have persistent first-degree AV block, raising concerns for annular abscess.
- Transesophageal echocardiogram (TEE) revealed a vegetation on a bicuspid aortic valve with a perforated leaflet, severe aortic insufficiency, and a vegetation on the ventricular surface of anterior leaflet of mitral valve; no abscess was seen (Figure 2).
- He was evaluated by Oral Maxillofacial Surgery who ruled out odontogenic infection as a possible source of IE.
- Two sets of blood cultures grew Streptococcus anginosus. Antibiotics were de-escalated from intravenous vancomycin and ceftriaxone to ceftriaxone alone at the recommendation of Infectious Diseases.
- He underwent a mechanical aortic valve replacement and mitral valve repair. Surgical cultures grew viridans group Streptococcus.
- A cardioverter-defibrillator device was placed for heart failure due to non-ischemic cardiomyopathy. He was also initiated on guideline-directed medical therapy for heart failure.
- The patient was discharged in good condition on post-op day 7 with a plan to complete four weeks of intravenous ceftriaxone from the time of surgery.

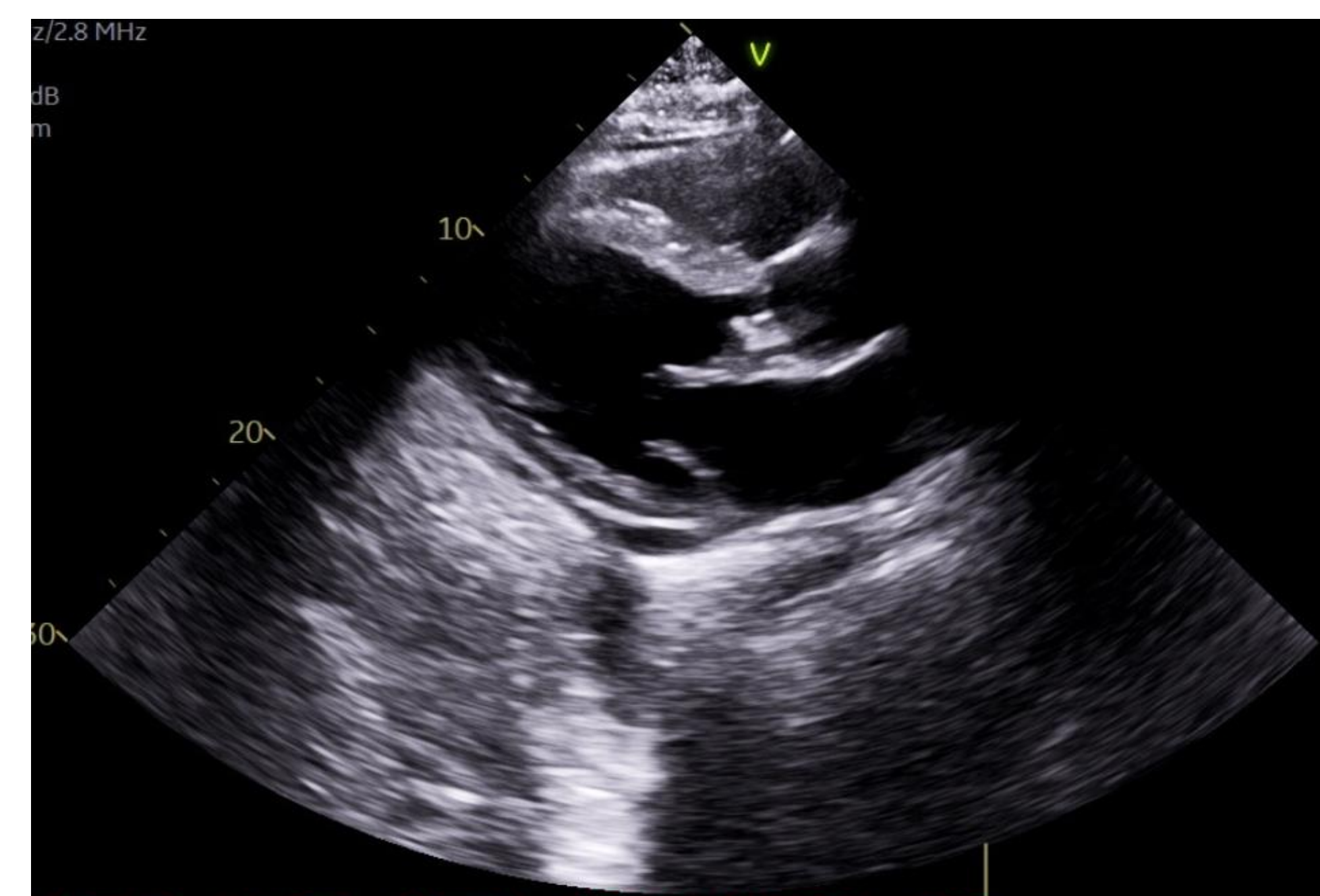


Figure 1: TTE in parasternal long axis with vegetation seen on aortic valve



Figure 2: TEE in ME four chamber view with vegetation on aortic valve and mitral valve

LEARNING POINTS

SAG is a potential cause of aggressive IE.

Conduction abnormalities in IE should prompt evaluation for peri-annular abscess.

Surgical tissue cultures may identify pathogens missed on blood cultures.

Early surgical intervention is critical in severe valvular dysfunction from valve destruction.

DISCUSSION

- Mixed cultures between SAG and viridans group Streptococcus highlight difficulty with accurate diagnosis using current molecular techniques.
- SAG rarely causes IE but can be very invasive and causes valvular abscess or destruction. Persistent conduction abnormality should raise concern for possible valvular abscess.
- The patient has no known risk factor for IE other than having a bicuspid aortic valve which causes turbulent blood flow and endothelial disruption.
- SAG is an opportunistic pathogen, and positive identification should prompt work-up for immunocompromised state.
- Valvular pathologies are a cause of non-ischemic cardiomyopathy. The patient's multivalvular endocarditis was the likely cause of his heart failure with reduced ejection fraction.
- In accordance with ACC/AHA guidelines, severe LV dysfunction requires placement of cardioverter-defibrillator to prevent arrhythmia.
- Early symptom recognition, multimodal imaging to survey extent of disease, and timely surgical intervention are critical to survival in severe IE.

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