Acute Coronary Syndrome Secondary to Methicillin-resistant Staphylococcus aureus Endocarditis

Amina Benguedouar; Edward Via College of Osteopathic Medicine
ShahZeib Syed, DO; Lewisgale Medical Center
Gretchen Junko, MD; Lewisgale Medical Center

Introduction

Left sided endocarditis is an infection involving the mitral and/or aortic valve. Intravenous drug use (IVDU) is associated with increased risk of developing infective endocarditis. The combination of repeated skin barrier disruption, high-risk drug use, and bacterial introduction is dangerous, as it typically leads to vessel and endocardium damage, predisposing to the development of endocarditis.[1] Left-sided endocarditis presents with high risk of embolization within the circulatory system. However, embolization through the coronary ostia into the rest of the coronary system appears to be uncommon.[5]

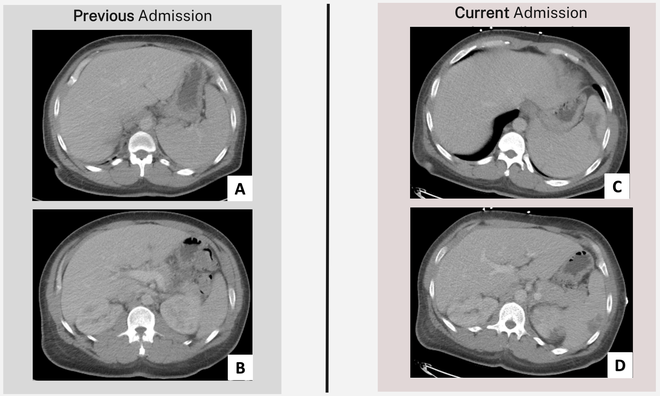
Case Presentation

A 34-year-old male with history of intravenous drug use with cocaine, methicillin-resistant *Staphylococcus aureus* (MRSA) infection, and mobile mitral valve vegetation presented to the hospital after leaving against medical advice 6 days prior. During their previous admission, the patient presented with a chief complaint of substernal chest pain and was found to be affected by invasive MRSA infection. Following their return, a transthoracic echocardiogram (TTE) revealed left-sided endocarditis with visualized fixed mitral valve vegetation on the measuring at 1.4 x 1.1 cm.

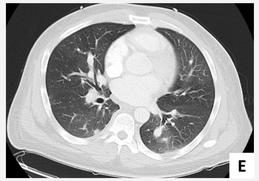
Hospital Course

- Day 0: Patient re-admitted for substernal chest pain.
- Day 1: TTE demonstrates mitral valve vegetation. Patient develops multiple splenic, renal and subpleural emboli.
- Day 2: Patient develops altered mental status. Lumbar puncture reveals meningitis.
- Day 3: Patient's condition continues to regress.
- Day 4: Brain magnetic resonance imaging (MRI) reveals emboli in the parietal and occipital lobes.
- Day 5: Patient is transferred to higher level care center.

Imaging



A & B. Computerized tomography (CT) of the abdomen and pelvis from previous admission prior to leaving against medical advice. There are no demonstratable infarcts. **C.** CT Abdomen/Pelvis from Day 2 of hospital admission showing multiple hypodensities in the spleen. **D.** CT abdomen/pelvis from Day 2 showing multiple hypodensities in the bilateral kidneys.

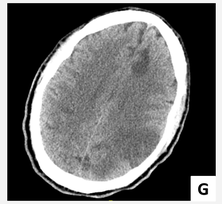


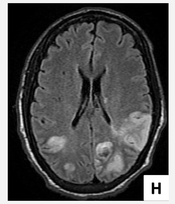
E. CT chest from Day 2 demonstrating 7mm nodule in the right lung .

F. TTE showing a medium-sized fixed vegetation on posterior mitral valve leaflet.

G. CT of the head exhibits multiple hypodensities in the parietal and occipital lobes on Day 4.

H. As a follow-up to abnormal CT head findings, fluid-attenuated inversion recovery MRI brain notable for findings consistent with thromboembolic etiology to multiple vascular territories. Some foci of abnormal enhancement noted, which are likely associated with encephalitis.





Discussion

- Intravenous drug use is the leading cause of infective endocarditis and has the highest rates of recurrence and lowest compliance with treatment.
- IVDU is associated with significantly increased risk of Methicillin Resistant Staphylococcus Aureus (MRSA) infection.[6]
- Coronary embolism secondary to infective endocarditis is an uncommon presentation and is often discovered at autopsy.
- Studies have remarked comorbidities to include heart failure, cardiogenic shock, and complete atrioventricular block leading to high morbidity and mortality.[2,3]
- Treatment of MRSA endocarditis typically consists of a 6-week course of vancomycin however with increased resistance rates, linezolid and quinupristin/dalfopristin are becoming more prevalent.[4] The approach here, given persistent infection, was to treat with vancomycin, gentamicin, and rifampin which is similar to the treatment for prosthetic valve MRSA infective endocarditis.

Conclusion

A rare case of embolic non-ST elevation myocardial infarction secondary to MRSA endocarditis is presented. The case shows how multiple factors came together to complicate treatment. Emphasis is given to early treatment of infective endocarditis and ways to improve patient compliance, particularly in those with a history of injection drug use.

References

1. Clarelin, A., et al. (2021). Comparing right- and left sided injection-drug related infective endocarditis. Scientific Reports, 11(1).
2. Welton D.E., et al. Value and safety of cardiac catheterization during active infective endocarditis. Am J Cardiol. 1979;44:1306–1310
3. Faluk MA,. et al. Challenges in Managing Acute Myocardial Infarction Associated With Infective Endocarditis: A Case Report. *Journal of Investigative Medicine High Impact Case Reports*. 2020;8.
4. Wilson WR et al. Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications: A Scientific Statement for Healthcare Professionals From the AHA. Circulation. 2015 Oct 13;132(15):1435-86.
5. Manzano M., et al. Acute coronary syndrome in infective endocarditis. *Rev. Esp.* Cardiol. Jan.2007;60(1):24-31.
6. Garvey GJ, Neu HC. Infective endocarditis-an evolving disease. A review of endocarditis at the Columbia-Presbyterian Medical Center, 1968-1973. Medicine (Baltimore). 1978 Mar;57(2):105-27.