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Gonococcal Endocarditis: An Unusual Complication of Disseminated Gonococcal Infection

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Abstract

Gonococcal endocarditis is a rare, potentially life-threatening manifestation of disseminated *Neisseria gonorrhoeae* infection. Diagnosis may be delayed because patients frequently lack concurrent genitourinary symptoms. This case involves a 30-year-old active-duty U.S. Army servicemember who presented with a four-month history of intermittent fever, rigors, diaphoresis, fatigue, nonproductive cough, and mild dyspnea. He reported unprotected sexual intercourse with three female partners during the preceding six months but denied genitourinary symptoms, injection drug use, or chronic alcohol use. During hospitalization, blood cultures obtained during a febrile episode grew *Neisseria gonorrhoeae*. Transthoracic echocardiography demonstrated a mobile vegetation measuring less than 1 cm on the anterior mitral leaflet, accompanied by mild-to-moderate mitral regurgitation. The patient responded favorably to targeted antimicrobial therapy and achieved sustained clinical remission, with no evidence of recurrence at the 12-month follow-up.

Categories: Cardiology, Internal Medicine, Infectious Disease
Keywords: disseminated gonococcal infection, infective endocarditis , military medicine, neisseria gonorrheae, sexually transmitted infections

Introduction

The first confirmed case implicating *Neisseria gonorrhoeae* as a cause of endocarditis was published by Thayer and Blumer in 1895, who recovered the organism from the blood of a patient with endocarditis [1]. Gonococcal endocarditis (GE) remains a rare but potentially life-threatening complication of disseminated gonococcal infection (DGI), with fewer than 80 reported cases in the literature since 1970. Delayed diagnosis is common because patients may not report or may lack preceding genitourinary symptoms [2-4]. We describe a case of gonococcal mitral valve endocarditis in an active-duty Army servicemember who presented with prolonged intermittent fever and no genitourinary complaints.

Case Presentation

A 30-year-old male active-duty Army servicemember presented to the emergency department with a four-month history of intermittent fevers, rigors, diaphoresis, fatigue, nonproductive cough, and mild dyspnea. His social history was significant for unprotected sexual encounters with three female partners during the preceding six months. He denied chronic alcohol use, intravenous substance use, and genitourinary symptoms.

At presentation, vital signs were notable for a temperature of 40.8 °C (105.4 °F), a heart rate of 157 beats/min, with an electrocardiogram revealing sinus tachycardia, and a respiratory rate of 24 breaths/min. Physical examination revealed tachypnea and tachycardia with a regular rhythm, without audible murmurs. Lung auscultation was clear bilaterally. There were no peripheral stigmata of infective endocarditis (IE), including rash, joint tenderness, skin lesions, or lymphadenopathy. Genitourinary examination revealed no urethral discharge.

Broad-spectrum antibiotics, including vancomycin and piperacillin-tazobactam, were initiated because of concern for sepsis. The patient underwent a thorough diagnostic evaluation. His chest radiograph and contrast-enhanced computed tomography (CT) scans of the chest, abdomen, and pelvis were unremarkable. Testing for SARS-CoV-2, influenza, and malaria (thick and thin blood smears, obtained because of a recent deployment to Afghanistan) yielded negative results. Initial inflammatory markers were elevated (erythrocyte sedimentation rate, 84 mm/hour; C-reactive protein, 225 mg/L), but the white blood cell count was normal ($8.3 \times 10^3/\mu L$). Blood cultures were obtained, and further serologic testing was performed to rule out human immunodeficiency virus, viral hepatitis, brucellosis, Bartonella infection, Q fever, and cytomegalovirus (CMV) infection. An autoimmune evaluation included tests for antinuclear antibodies, rheumatoid factor, and antimitochondrial antibodies.

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Despite negative results from the initial evaluation, the patient remained febrile, and repeat blood cultures obtained during a febrile episode isolated *N. gonorrhoeae*, confirming the diagnosis of gonococcal infection. The isolate was beta-lactamase negative. Nucleic acid amplification testing (NAAT) of urine, oropharyngeal, and rectal specimens was subsequently performed, but all results were negative.

Given the high suspicion for IE, transthoracic echocardiography (TTE) was performed. It revealed a small (<1 cm), mobile echogenic density attached to the anterior mitral valve leaflet, with mild-to-moderate mitral regurgitation, consistent with GE (Figures *1*-*3*). The patient's clinical condition improved rapidly following initiation of intravenous ceftriaxone, and blood cultures cleared after two days.

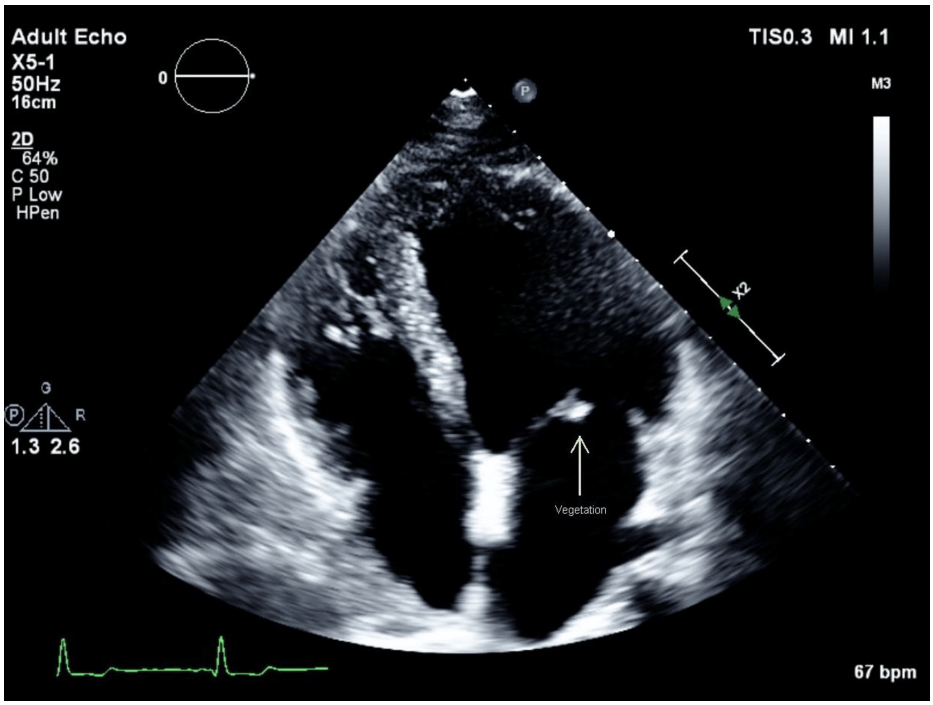


FIGURE 1: Small (<1 cm) vegetation affixed to the anterior mitral valve leaflet in the apical four-chamber view.

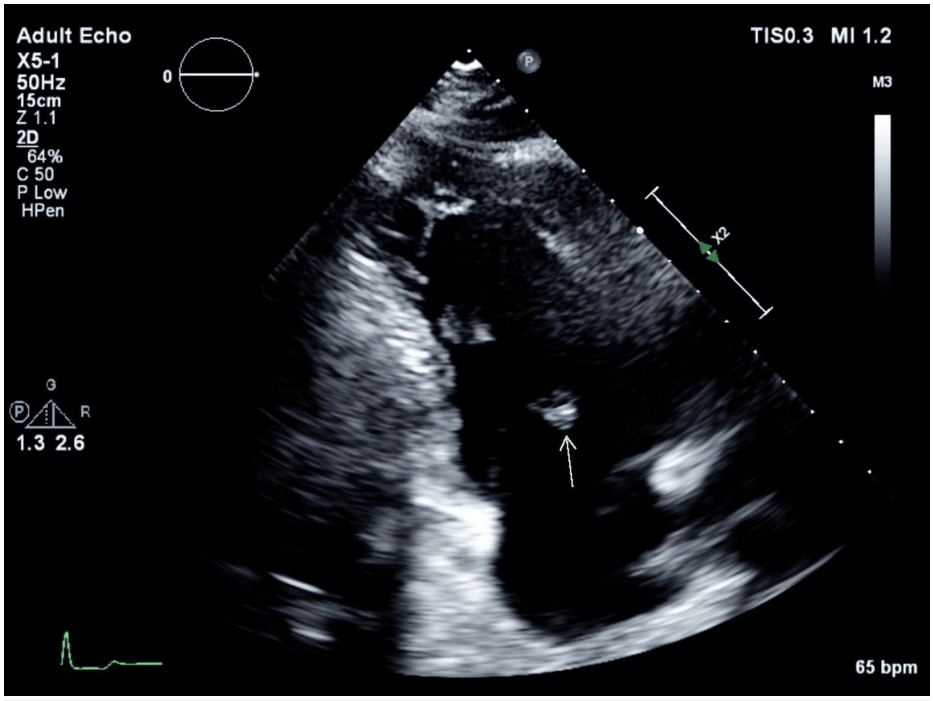


FIGURE 2: Small (<1 cm) vegetation affixed to the anterior mitral valve leaflet in the apical two-chamber view.

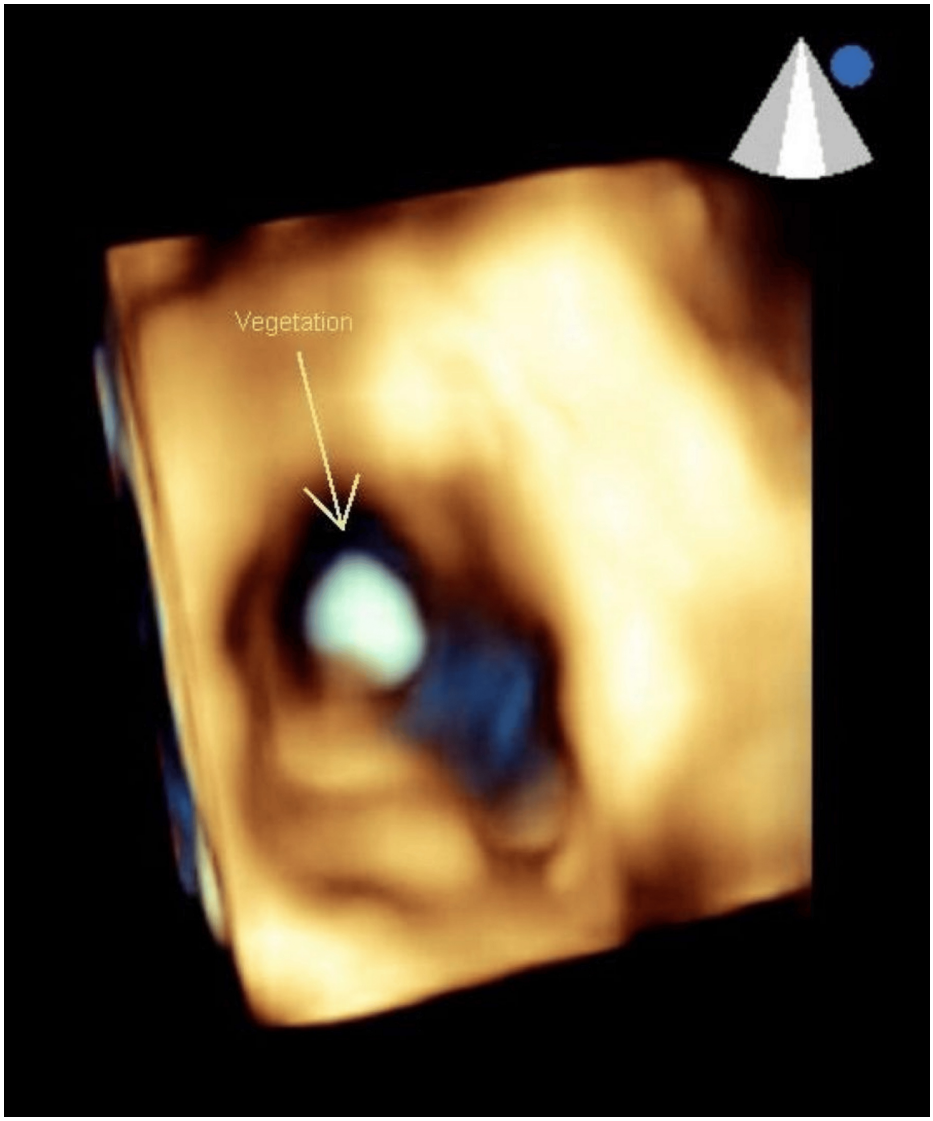


FIGURE 3: Small (<1 cm) vegetation (arrow) affixed to the anterior mitral valve leaflet in the 3D mitral valve (bird's-eye) view.

The patient was discharged on a six-week course of parenteral ceftriaxone, administered through a peripherally inserted intravenous catheter. Evaluation for terminal complement deficiency using a CH50 assay was performed at discharge, and the results subsequently returned negative.

After completion of antibiotic therapy, repeat TTE demonstrated a persistent echogenic density affixed to the anterior mitral valve leaflet, unchanged in size from the prior study, with mild-to-moderate mitral regurgitation and no evidence of progression. At the 12-month follow-up, he remained asymptomatic despite the persistent vegetation. He was referred to cardiology for continued surveillance.

Discussion

N. gonorrhoeae remains among the most commonly reported sexually transmitted infections (STIs) in the United States. The Centers for Disease Control and Prevention (CDC) reported more than 540,000 cases of gonorrhea in the United States in 2024, underscoring the continuing public health importance of *N. gonorrhoeae* infection [5]. Clinical manifestations of gonorrhea range from asymptomatic infection to mucosal infection involving the urogenital tract, pharynx, anorectum, or conjunctiva, to DGI. GE is a rare manifestation, occurring in approximately 1%-2% of patients with disseminated disease and predominantly affecting young, previously healthy males [6,7]. This case illustrates GE presenting as prolonged intermittent fever in a young, otherwise healthy active-duty servicemember without genitourinary symptoms. The absence of urethritis or other mucosal symptoms should not exclude gonococcal infection or DGI, particularly in sexually active patients with persistent fever and no alternative diagnosis [2-4].

DGI occurs when *N. gonorrhoeae* spreads hematogenously from a mucosal infection. Classic DGI may present with a triad of dermatitis, tenosynovitis, and migratory polyarthralgia; however, severe focal complications, including infective endocarditis, may occur without these findings [6,7]. Our patient had no rash, joint symptoms, or genitourinary complaints, which likely contributed to the diagnostic challenge. His negative urine, pharyngeal, and rectal nucleic acid amplification tests may reflect clearance of the primary mucosal infection, infection at an untested site, or a low organism burden at the time of testing. In this setting, blood-culture isolation of *N. gonorrhoeae* was diagnostically decisive.

Current CDC guidelines recommend treatment of GE with intravenous ceftriaxone at a dose of 1-2 g every 12-24 hours for a minimum of four weeks and empiric treatment for Chlamydia trachomatis if co-infection has not been excluded. However, the CDC acknowledges that limited data exist to guide the management of DGI. In this case, the patient was treated with ceftriaxone 2 g intravenously every 24 hours for six weeks. Although chlamydial testing was negative, doxycycline was administered empirically. Given the rarity of GE, the CDC emphasizes the importance of determining an individualized treatment duration in consultation with infectious diseases specialists [7].

GE most frequently involves left-sided cardiac valves, most commonly affecting the aortic valve, followed by the mitral valve [8]. Compared with endocarditis caused by other pathogens, GE is associated with a significantly higher rate of surgical valve intervention, reported in up to 72% of cases, compared with 25%-50% for other etiologies. This is especially true when endocarditis is complicated by severe regurgitation, abscess formation, heart failure, persistent bacteremia, or embolic disease [9-13]. In contrast, our patient demonstrated rapid microbiologic clearance and clinical improvement with antimicrobial therapy alone. Although his mitral valve vegetation persisted on follow-up imaging, there was no echocardiographic progression or clinical recurrence during 12 months of follow-up.

Despite its fastidious growth requirements, *N. gonorrhoeae* can be reliably isolated using modern automated blood culture systems. A literature review by Ramos et al. identified 39 reported cases between 1980 and 2016,all of which had positive blood cultures [13]. In cases of culture-negative GE, NAAT or 16S rRNA gene sequencing targeting the porin A (porA) and transferrin-binding protein B (tbpB) genes in excised valve tissue may facilitate diagnosis [14]. Notably, the sensitivity of valve cultures in GE is lower than that observed with other causative organisms, possibly related to the initiation of highly effective antibiotic therapy before surgical intervention.

This case has particular relevance to military medicine. Active-duty populations may experience barriers to STI disclosure, including concerns about stigma, confidentiality, deployability, or career implications. A nonjudgmental sexual history is therefore essential when evaluating servicemembers with prolonged fever, unexplained bacteremia, or suspected endocarditis. Early recognition of GE may prevent valvular destruction, surgical intervention, prolonged hospitalization, and loss of duty availability.

Conclusions

Our case represents a rare complication of DGI and a valuable addition to the limited literature on GE. Clinicians should consider this diagnosis in sexually active patients with persistent or recurrent fever, even when genitourinary symptoms and mucosal-site NAAT are absent. Blood cultures and echocardiography are critical diagnostic tools, and prompt targeted antimicrobial therapy may prevent severe valvular complications. Early diagnosis and treatment led to a positive outcome without the need for valve replacement in this patient.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Daniel Blankinship, Kevin Yum, Robert Gauer

Acquisition, analysis, or interpretation of data: Daniel Blankinship, Robert Gauer, David Kassop, Janelle Robertson

Drafting of the manuscript: Daniel Blankinship, Kevin Yum, Robert Gauer

Critical review of the manuscript for important intellectual content: Daniel Blankinship, Kevin Yum, Robert Gauer, David Kassop, Janelle Robertson

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all

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References

1. Thayer WS, Lazear JW: A second case of gonorrhoeal septicaemia and ulcerative endocarditis with observations upon the cardiac complications of gonorrhoea. J Exp Med. 1899, 4:81-116. 10.1084/jem.4.1.81
2. Said M, Tirthani E: Gonococcal infective endocarditis returns . Cureus. 2021, 13:e17955. 10.7759/cureus.17955
3. Butler WN, Stephenson C, Young BD, et al.: An evasive case of gonococcal endocarditis . Cureus. 2023, 8:15.
4. Whittaker M, Phillips C, Fletcher KE: Sexually transmitted ischemia, the other STI: a case of gonococcal endocarditis with acute limb ischemia. Ann Internal Med Clin Cases. 2024, 3: 10.7326/aimcc.2023.0065
5. Centers for Disease Control and Prevention. Sexually transmitted infection surveillance . (2024). Accessed: September 28, 2026: https://www.cdc.gov/sti-statistics/annual/index.html.
6. Morgan MK, Decker CF: Gonorrhea. Dis Mon. 2016, 62:260-8. 10.1016/j.disamonth.2016.03.009
7. Centers for Disease Control and Prevention. Gonococcal infections among adolescents and adults - STI treatment guidelines. (2021). https://www.cdc.gov/std/treatment-guidelines/gonorrhea-adults.htm.
8. Wall TC, Peyton RB, Corey GR: Gonococcal endocarditis: a new look at an old disease . Medicine (Baltimore). 1989, 68:375-80.
9. Tailor N, Dean MR, Dellalana M, Jitendranath L: Gonococcal endocarditis with aortic root abscess and severe aortic insufficiency. IDCases. 2022, 28:e01474. 10.1016/j.idcr.2022.e01474
10. Abu-Hilal LH, Njoum Y, Jabbarin FM, Barghouthi DI, Hamamdah A, Bourini M, Mtour S: Gonococcal endocarditis in a 32-year-old male: a rare presentation of an underrecognized disease - case report. Ann Med Surg (Lond). 2023, 85:5096-9. 10.1097/MS9.0000000000001125
11. Asreb, A, Ghasemzadeh, N: Neisseria gonorrhea Infective Endocarditis with severe mitral insufficiency . JACC. 2024, 1016:0735-1097. 10.1016/S0735-1097(24)05773-5
12. Saleh Z, Florea I, Scalia D, et al.: An atypical presentation of gonococcal endocarditis . JACC Case Rep. 2024, 29:102370. 10.1016/j.jaccas.2024.102370
13. Ramos A, García-Pavía P, Orden B, et al.: Gonococcal endocarditis: a case report and review of the literature. Infection. 2014, 42:425-8. 10.1007/s15010-013-0541-9
14. Nielsen US, Knudsen JB, Pedersen LN, et al.: Neisseria gonorrhoeae endocarditis confirmed by nucleic acid amplification assays performed on aortic valve tissue. J Clin Microbiol. 2009, 47:865-7. 10.1128/JCM.01704-08