

Polymicrobial Purulent Pericardial Effusion Leading to Cardiac Arrest in an Immunocompetent Adult: A Case Report and Literature Review

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Abstract

Background: Purulent Pericardial Effusion (PPE) is an uncommon but life-threatening infection of the pericardial space, often seen in immunocompromised individuals. Its fulminant course and diagnostic challenges contribute to high rates of complications and death, even when appropriately treated.

Case Presentation: A 32-year-old male with a history of polysubstance misuse and recent treatment for viral pericarditis presented after previously eloping from the hospital with a pericardial drain in situ. Despite initial hemodynamic stability, his condition rapidly deteriorated, leading to acute hypotension and cardiac arrest in the setting of recurrent large pericardial effusion with tamponade physiology. Following successful resuscitation, urgent CT-guided pericardiocentesis drained copious purulent fluid that grew *Streptococcus anginosus*, *Prevotella melaninogenica*, *Neisseria* species, and *Candida albicans*, with concurrent *Streptococcus pneumoniae* bacteremia. He was successfully treated with intravenous antibiotic and antifungal therapy. Serial echocardiography confirmed no effusion recurrence, and the drain was removed on day 7.

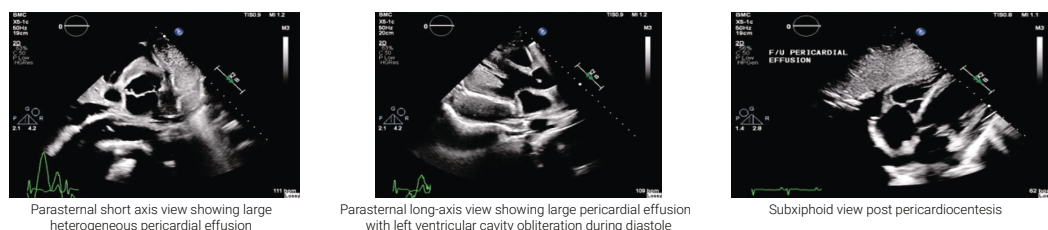


Figure 1: Transthoracic echocardiography demonstrating a large heterogeneous pericardial effusion with diastolic left ventricular compression on parasternal views, and reduction in effusion following pericardiocentesis on subxiphoid imaging

Discussion: This case underscores the diagnostic complexity of PPE. A high index of suspicion is required and is based on clinical presentation and imaging findings. Heterogeneous, fibrinous effusions with tamponade physiology should prompt early drainage and culture to guide treatment and prevent complications. The use of Light's criteria may assist in establishing the diagnosis before culture results are available. Serial imaging is essential for detecting reaccumulation or constrictive evolution. Multimicrobial involvement, including fungal pathogens, undermines the need for broad initial coverage and multidisciplinary care.

Conclusion: Polymicrobial PPE can progress rapidly despite initial stability. High suspicion, urgent drainage, and antimicrobial therapy are critical to survival and preventing recurrence.

Index Terms

Cardiac Tamponade, Polymicrobial infection, Pericardiocentesis, Purulent Pericardial Effusion, Fungal Pericarditis