Published Online: 2025 December 31 **Case Report**

Dilated Cardiomyopathy Presenting with Epigastric Pain, Mild Dyspnea and Rapidly Progressing Multi-Organ Failure

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Abstract

Introduction: Dilated cardiomyopathy (DCM) is characterized by ventricular dilation and impaired systolic function, defined by a left ventricular ejection fraction (LVEF) below 40%. While it typically presents with heart failure symptoms, atypical or gastrointestinal manifestations could delay diagnosis and treatment.

Case Presentation: A 17-year-old previously healthy male presented with a five-day history of epigastric pain, vomiting, mild exertional dyspnea, and palpitations. On admission, he had hypotension (BP 60/20 mmHg), tachycardia (HR 130 bpm), and tachypnea (RR 30/min). Echocardiography revealed global hypokinesia with an LVEF of 25%, consistent with DCM. Laboratory test results showed leukocytosis, renal impairment, conjugated hyperbilirubinemia, coagulopathy, and transudative pleural effusions, indicating multi-organ dysfunction. Infectious, metabolic, and toxic causes were excluded. The patient required triple inotropic support, nine sessions of hemodialysis, and thoracentesis.

Conclusions: With multidisciplinary management, he stabilized clinically and biochemically. At the four-week follow-up, echocardiography showed improved LVEF (45%) with complete symptomatic recovery.

Keywords: Cardiomyopathy, Pleural Effusion, Dilated Cardiomyopathy, Dialysis, Left Ventricular Dysfunction, Echocardiography, Multi-Organ Failure

1. Introduction

Dilated cardiomyopathy (DCM) is marked by ventricular dilation and impaired systolic function, defined by a left ventricular ejection fraction (LVEF) below 40% (1, 2). It often leads to heart failure symptoms, though many patients remain asymptomatic (3, 4). The DCM is more prevalent in men, affecting about 36 per 100,000 people and accounting for roughly 10,000 deaths and 46,000 hospitalizations annually in the United States, though the true prevalence is likely higher due to undiagnosed cases (2, 4). Herein, we report a rare and instructive case of rapidly progressing multi-organ failure in a young male, where the initial presentation was deceptively benign. This case underscores that DCM in young patients can present atypically with gastrointestinal complaints before progressing to cardiogenic shock. Early echocardiographic evaluation is essential when initial symptoms are unexplained by primary gastrointestinal causes. Clinicians should maintain a high index of suspicion for cardiac pathology in young patients with unexplained abdominal or respiratory symptoms. Prompt diagnosis and coordinated multidisciplinary management can lead to favorable recovery even in severe DCM with multi-organ failure.

2. Case Presentation

A 17-year-old male, previously healthy, presented with a five-day history of epigastric pain and vomiting, along with exertional shortness of breath and palpitations. There was no history of fever, altered bowel habits, skin

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rashes, joint pains, or illicit drug use. Additionally, the patient denied alcohol abuse, recent viral illnesses, exposure to cardiotoxic medications or chemotherapy, and there was no family history of cardiomyopathy or sudden cardiac death. On admission, he was hypotensive (BP 60/20 mmHg), tachycardic (HR 130 bpm) and tachypneic (RR 30/min), though alert and oriented. Auscultation revealed bilateral basal decreased air entry, and abdominal examination showed right hypochondrial tenderness. Initial investigations revealed normal sinus rhythm on ECG but severe left ventricular systolic dysfunction on echocardiography, with an LVEF of 25% and global hypokinesia, confirming a diagnosis of

DCM. Laboratory test results were significant for leukocytosis (TLC 24.6 x10^9/L), rising urea (107 mg/dL) and creatinine (2.3 mg/dL), conjugated hyperbilirubinemia, hypoalbuminemia, coagulopathy (INR 8), elevated D-dimers and pleural effusions, suggesting multi-organ dysfunction. Cultures were sterile, and pleural fluid was transudative (approximately 1000cc drained). Serologic tests for hepatitis B, hepatitis C, HIV, and syphilis gave negative results. Both thyroid function tests and iron studies were within normal limits. He required triple inotropic support initially, renal replacement therapy (9 sessions of hemodialysis), thoracentesis and escalated antibiotic therapy. Over the course of his hospitalization, he stabilized with improved urine output, normalized inflammatory and renal markers and resolution of pleural effusion. He was educated on the importance of salt and fluid restriction in addition to cardiac rehabilitation. Follow-up was planned to monitor ventricular function, long-term recovery and continued patient education. At follow-up after 4 weeks, the repeated echocardiography showed improved LVEF to 45%, with marked clinical recovery and no recurrence of symptoms.

3. Discussion

The DCM in young patients is often underdiagnosed due to non-specific initial symptoms, particularly gastrointestinal complaints (4, 5). If not diagnosed at the correct time and adequately managed, DCM often follows a worsening trajectory, frequently progressing to advanced heart failure and potentially leading to death (6, 7). Although some patients remain asymptomatic initially due to temporary cardiac compensation, but symptoms, when present, reflect left ventricular systolic dysfunction and include exertional dyspnea, fatigue, orthopnea, peripheral edema and palpitations (7, 8). Progressive ventricular dilation leads to declining cardiac function and complications such as conduction abnormalities, arrhythmias, thromboembolism and heart failure (6-8). Early diagnosis and proper management are key to improving long-term outcomes. In our case, the progression from mild epigastric pain to cardiogenic shock with multi-organ failure was swift. This underscores the need for early cardiac imaging in young patients with unexplained dyspnea or abdominal pain, even in the absence of overt cardiac history.

There are numerous underlying causes of DCM, each influencing ventricular performance to varying degrees. The DCM can be classified as primary (idiopathic), where no clear cause is identified, or secondary, resulting from conditions such as infections, toxins, metabolic disorders or ischemic heart disease (2, 9, 10). Differentiating between primary and secondary DCM is essential for targeted management. Diagnosis involves ruling out secondary causes through clinical history and examination, labs (thyroid function, HIV, iron studies, toxicology) and relevant imaging (2, 9, 11). Chest X-ray may show cardiomegaly and congestion, while ECG findings are usually nonspecific but can show arrhythmias. Echocardiography is the key to assessing ventricular size, function and valve involvement (12-14). Coronary angiography helps exclude ischemic cardiomyopathy in appropriate cases. Genetic testing may be considered in cases of familial DCM.

3.1. Conclusions

In conclusion, this case reinforces the value of early multidisciplinary intervention, including critical care, cardiology and nephrology support, in achieving recovery in severe low-output states. We suggest clinicians maintain a high index of suspicion for cardiac causes in atypical presentations to facilitate timely diagnosis and intervention.

Footnotes

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