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Lupus Myocarditis Presenting as Global Heart Failure: Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Context: Myocarditis is a rare but potentially life-threatening complication in patients with systemic lupus erythematosus (SLE). It involves inflammation of the cardiac muscle, which can lead to heart failure, arrhythmias, and myocardial dysfunction. Early recognition and appropriate management are crucial for improving outcomes.
Introduction: SLE is a systemic autoimmune disorder that can affect multiple organs, including the heart. While pericarditis is the most common cardiac manifestation, lupus myocarditis remains rare but poses significant risks. Its clinical presentation can overlap with other causes of heart failure, making diagnosis challenging. Imaging and biomarker evaluation are essential in ruling out other potential causes of cardiomyopathy.
Case Presentation: We report the case of a 51-year-old female with a 10-year history of SLE who presented with progressive dyspnea, peripheral edema, and global heart failure. Transthoracic echocardiography revealed severe hypokinetic cardiomyopathy with a left ventricular ejection

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fraction of 15%. Electrocardiogram (ECG) showed Q waves in the anteroseptal region and a left anterior fascicular block. Coronary angiography excluded significant obstructive coronary disease, and cardiac magnetic resonance imaging (MRI) suggested myocarditis. Lupus myocarditis was suspected based on the clinical findings and the exclusion of other causes.

Conclusion: Lupus myocarditis is a rare but important consideration in SLE patients presenting with heart failure. Early diagnosis, using noninvasive imaging and clinical exclusion of other causes, is essential for initiating timely treatment. Aggressive immunosuppressive therapy can stabilize the patient's condition, although residual cardiac dysfunction may persist. Further research is needed to refine diagnostic criteria and optimize therapeutic approaches for this condition.

Keywords: Cardiomyopathy; heart failure; myocarditis; systemic lupus erythematosus.

1. INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease characterized by widespread inflammation and tissue damage affecting multiple organ systems, including the skin, joints, kidneys, and heart [1]. Cardiac manifestations of SLE are diverse and can include pericarditis, myocarditis, endocarditis, and accelerated atherosclerosis leading to coronary artery disease [2].

Among these, lupus myocarditis is relatively rare, occurring in approximately 1-5% of patients with SLE, yet it poses significant risks, including severe heart failure, arrhythmias, and potential long-term cardiac dysfunction [3, 4].

Lupus myocarditis often presents with nonspecific symptoms that overlap with other causes of heart failure, making early diagnosis challenging [5].

In many cases, the clinical features may include progressive dyspnea, chest pain, and palpitations, alongside typical signs of heart failure such as peripheral edema [6]. The pathophysiology of lupus myocarditis is thought to involve immune-mediated damage, where the deposition of immune complexes and inflammatory cells within the myocardium leads to myocardial inflammation and necrosis [7, 8].

Advanced cardiac imaging, particularly cardiac magnetic resonance imaging (MRI), plays a crucial role in diagnosing myocarditis by allowing for the noninvasive assessment of myocardial inflammation and function [9]. While endomyocardial biopsy remains the gold standard for diagnosis, it is often limited by its invasive nature and associated risks [10].

This case report aims to illustrate the diagnostic and therapeutic challenges associated with lupus myocarditis in a patient presenting with severe hypokinetic cardiomyopathy. The findings underscore the importance of high clinical suspicion and the integration of advanced imaging modalities in the diagnosis and management of this rare but serious condition.

2. CASE PRESENTATION

A 51-year-old female, with a 10-year history of systemic lupus erythematosus, presented to the emergency department with progressive dyspnea and peripheral edema. Clinical examination revealed global congestive heart failure with bilateral pulmonary crackles, tachycardia, and a blood pressure of 100/70 mmHg. The ECG showed anteroseptal Q waves and a left anterior fascicular block (Fig. 1).

Transthoracic echocardiography demonstrated hypokinetic cardiomyopathy with a left ventricular ejection fraction (LVEF) of 15%, indicating severe systolic dysfunction. Coronary angiography ruled out significant obstructive coronary artery disease.

Cardiac biomarkers were elevated, with troponin levels at 1600, suggesting active myocardial injury. Viral serologies commonly associated with myocarditis were negative, and autoimmune tests showed no new abnormalities beyond those related to SLE. Cardiac MRI revealed findings consistent with myocarditis, including non-systematized late gadolinium enhancement. While endomyocardial biopsy remains the gold standard for diagnosing myocarditis, it was not performed due to the associated risks in this patient.

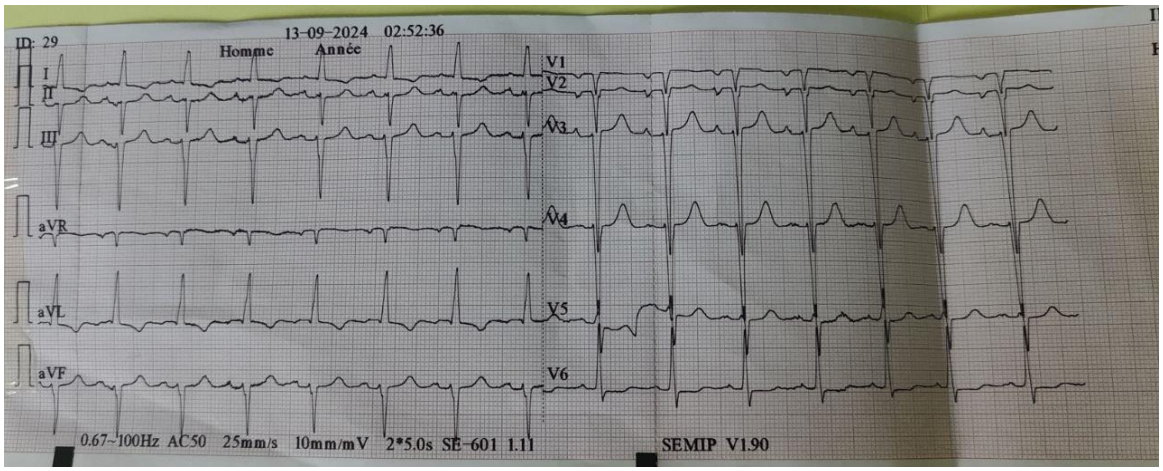

Fig. 1. The ECG showed anteroseptal Q waves and a left anterior fascicular block

3. DISCUSSION

Lupus myocarditis is a rare but serious complication of systemic lupus erythematosus (SLE), often presenting with nonspecific signs and symptoms that can complicate timely diagnosis. In this patient, the absence of other apparent etiologies for heart failure, alongside cardiac MRI findings indicative of myocardial inflammation, strongly supported the diagnosis of probable lupus myocarditis [1].

The clinical presentation in this case aligns with findings in previous studies, which highlight that patients with lupus myocarditis frequently exhibit signs of heart failure, including dyspnea and peripheral edema, often without distinct cardiac symptoms.

Cardiac manifestations in SLE are diverse, ranging from the more common pericarditis to rarer conditions like myocarditis and valvular disease. A review by Thomas et al. [2] emphasizes the variable nature of these manifestations, noting that myocarditis may occur in approximately 1-5% of SLE patients but remains underdiagnosed due to its nonspecific presentation and overlapping symptoms with other causes of heart failure. The pathogenesis of lupus myocarditis is multifactorial, involving immune complex deposition, inflammatory cell infiltration, and direct myocardial injury [3]. This complexity necessitates a high index of suspicion, especially when conventional investigations, such as coronary angiography, fail to reveal an alternative cause of heart failure [4, 5].

Cardiac MRI plays a pivotal role in diagnosing myocarditis, as it can noninvasively detect myocardial inflammation and injury through techniques like late gadolinium enhancement. While endomyocardial biopsy remains the definitive diagnostic tool, it is often impractical due to its invasive nature and potential complications [6, 7].

In line with findings from Chow et al. [6], our case relied on advanced imaging and clinical exclusion of other causes, highlighting the growing recognition of cardiac MRI as a crucial diagnostic modality in lupus myocarditis.

The treatment of lupus myocarditis typically involves high-dose corticosteroids and immunosuppressive agents aimed at controlling the underlying autoimmune inflammation [8]. In this case, treatment with high-dose corticosteroids followed by immunosuppression with mycophenolate mofetil led to moderate clinical improvement. Previous studies indicate that timely immunosuppressive therapy is essential; however, the degree of recovery can be variable.

For instance, Wang et al. [9] reported that some patients achieve substantial improvement in cardiac function with aggressive immunosuppressive regimens, while others continue to exhibit significant left ventricular dysfunction despite treatment, as seen in our patient whose left ventricular ejection fraction (LVEF) remained severely compromised at 20%.

The chronic impact of lupus myocarditis on cardiac function cannot be overstated. The literature suggests that delayed diagnosis can lead to irreversible myocardial damage and poor outcomes [10].

This case underscores the necessity for early recognition and intervention to prevent further myocardial damage and improve long-term prognosis. While aggressive treatment strategies can stabilize the patient's condition, they may not fully restore cardiac function, emphasizing the importance of ongoing monitoring and tailored therapeutic approaches [11,12].

4. CONCLUSION

Lupus myocarditis is a rare but critical cause of heart failure in patients with systemic lupus erythematosus. Rapid and accurate diagnosis is essential for initiating appropriate treatment and potentially improving outcomes. In this case, a high clinical suspicion, supported by noninvasive investigations and aggressive treatment, allowed stabilization of the patient despite severely compromised residual cardiac function. Further studies are needed to better define the diagnostic criteria and optimal therapeutic approaches for lupus myocarditis, particularly considering the heterogeneous nature of cardiac involvement in SLE.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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