Case Report

Massive Pericardial Effusion in Young Woman as Initial Presentation of Systemic Lupus Erythematosus

Hashfi Khairuddin[1] and Deri Arara[2]

ABSTRACT

Life-threatening cardiovascular compromise may occur when extensive pericardial effusion represents the initial manifestation of an underlying autoimmune disorder such as systemic lupus erythematosus. An 18-year-old woman presented with worsening dyspnea, palpitations, and peripheral edema. Physical examination revealed tachycardia and muffled heart sounds. Laboratory evaluation demonstrated anemia, leukopenia, thrombocytopenia, elevated creatinine levels, and significant proteinuria. Electrocardiography showed low-voltage QRS complexes, while chest radiography revealed a characteristic "water bottle" cardiac silhouette. Transthoracic echocardiography confirmed massive pericardial effusion with right atrial systolic collapse and marked respiratory variation in tricuspid inflow, indicating hemodynamic significance. The diagnosis was established by a positive antinuclear antibody test and an EULAR/ACR classification score of 13. Treatment with anti-inflammatory agents, immunosuppressive therapy, and supportive cardiovascular management resulted in clinical improvement, and the patient was discharged after five days. This case underscores the importance of considering autoimmune etiologies in young patients presenting with unexplained massive pericardial effusion.

Key Words: Pericardial Effusion, Systemic Lupus Erythematosus, Women and Cardiovascular Disease

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INTRODUCTION

Systemic lupus erythematosus represents a long-standing immune-mediated condition characterized by dysregulated antibody production and inflammatory processes driven by immune complex deposition, with the capacity to involve multiple organ systems across the body. It disproportionately impacts women of reproductive age, with a clinical spectrum ranging from mild mucocutaneous involvement to life-threatening organ dysfunction. SLE is associated with a diverse array of cardiovascular manifestations, including pericarditis, myocarditis, coronary artery disease, and conduction abnormalities.[1] Pericardial involvement is one of the most prevalent manifestations of cardiac disease in SLE, identified in 20–50% of patients during the illness when assessed using echocardiography.[2,3]

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CASE PRESENTATION

A previously healthy 18-year-old female sought medical attention after experiencing progressive shortness of breath over two days, associated with episodic palpitations, along with bilateral leg swelling that had developed over the preceding month. Initial assessment revealed stable arterial pressure with marked tachycardia and tachypnea, while body temperature and peripheral oxygenation remained within normal limits. Cardiovascular examination demonstrated diminished cardiac auscultation findings in the absence of neck vein distension.

Hematologic evaluation demonstrated a reduction across all major blood cell lines, including decreased hemoglobin concentration, suppressed leukocyte count, and a markedly low platelet level. Renal function was impaired, with serum creatinine elevated to 2.4 mg/dL and significant proteinuria (+3). Electrocardiography showed low-voltage QRS complexes. Chest radiography revealed a "water bottle" cardiac silhouette, and transthoracic echocardiography confirmed a massive pericardial effusion (2.5–3.5 cm) with right atrial systolic collapse and a 50% respiratory variation in tricuspid inflow, consistent with hemodynamically significant effusion.

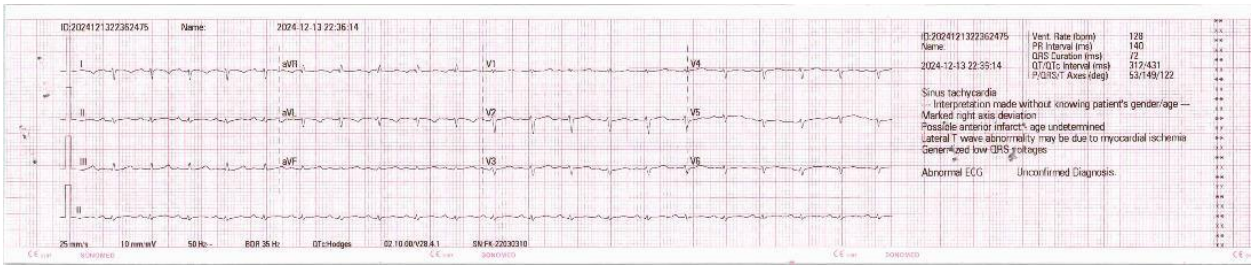

Figure No. 1: Electrocardiogram showed sinus tachycardia with right axis deviation and generalized low QRS voltages

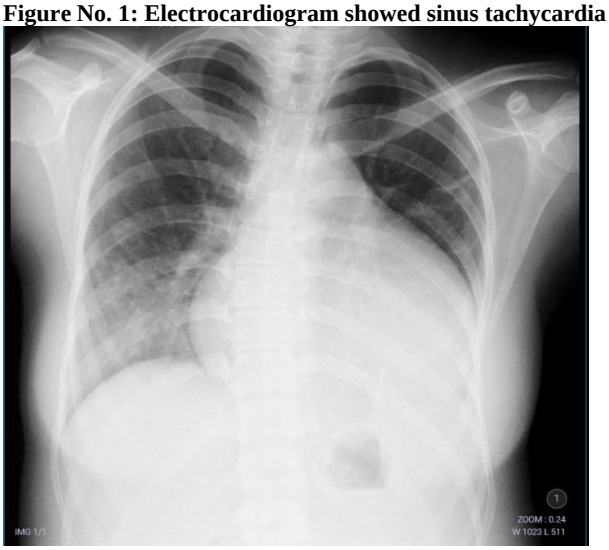

Figure No. 2. The 'Water Bottle' Sign

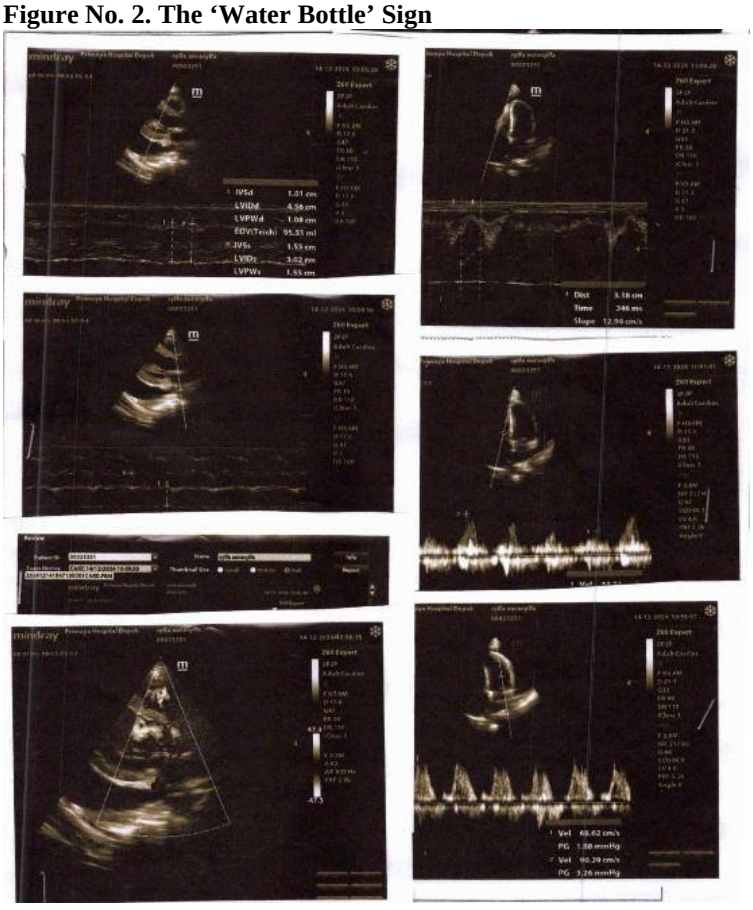

Figure No. 3: Transthoracic echocardiography showed Good global LV systolic function, LVEF 62% (Teich); massive pericardial effusion around the heart (2.5-3.5 cm); right atrium systolic collapsed (+); tricuspid inflow variation 50%

Serologic evaluation demonstrated a markedly elevated antinuclear antibody level, with a titer reaching 1:320. Diagnostic classification was subsequently established through application of the European Alliance of Associations for Rheumatology and American College of Rheumatology criteria, yielding a cumulative score of 13. Management consisted of combined anti-inflammatory, immunosuppressive, and cardiovascular supportive therapy. Following treatment initiation, the patient showed progressive clinical recovery and was discharged after a five-day inpatient course.

DISCUSSION

While cardiac involvement forms an integral part of lupus-related organ damage, it is often overlooked in routine assessment of disease activity. Pericardial fluid collection remains the most frequently observed cardiac feature, with imaging studies documenting its presence in a significant subset of patients over time. In contrast, massive pericardial effusion causing clinically significant hemodynamic compromise as an initial presentation of SLE is rare. Only a small proportion of patients present with severe pericardial involvement at onset, which illustrates the importance of high clinical suspicion in young patients with unexplained pericardial effusion.[4,5]

Pericardial effusion in systemic lupus erythematosus (SLE) results from autoimmune-mediated serosal inflammation. Immune complex deposition on pericardial surfaces activates complement and recruits inflammatory cells, increasing vascular permeability and fluid exudation into the pericardial space. Serositis is part of the SLE classification criteria, but most effusions are small, don't cause any symptoms, and are found by chance. In contrast, massive effusions with echocardiographic features of tamponade indicate more severe inflammatory activity and are often associated with additional systemic manifestations, such as cytopenias and renal involvement.[6–8]

Management of SLE-associated pericardial effusion centers on suppression of autoimmune inflammation with supportive therapy. High-dose corticosteroids are first-line treatment for significant lupus serositis, with additional immunosuppressive agents, such as hydroxychloroquine or azathioprine, considered according to disease severity and systemic involvement.[9] Diuretics may alleviate symptoms of volume overload, particularly in patients with concomitant renal disease. Nonsteroidal anti-inflammatory drugs and colchicine are standard therapies for inflammatory pericarditis, reducing symptoms and recurrence risk. Colchicine exerts anti-inflammatory effects through inhibition of leukocyte activation, complementing corticosteroid therapy in controlling pericardial inflammation.[10]

CONCLUSION

The rarity of massive pericardial effusion as an initial feature of SLE emphasizes the need for clinicians to maintain a broad differential diagnosis when encountering young patients with large effusions, especially in the context of hematologic abnormalities or proteinuria. Recognition of this association can accelerate diagnosis, enable timely immunomodulatory treatment, and prevent progression to life-threatening complications such as cardiac tamponade.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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REFERENCES

1. Al-Zahir MZ, Chan K-L. Echocardiography in Systemic Lupus Erythematosus. Curr Cardiol Rep 2024;26:1265-1271.
2. Zeb R, Chinome DVC, Chacon M, Singh T, Chowdary MM, Vidals CJM, et al. Cutaneous Manifestations of Systemic Lupus Erythematosus and Their Correlation With Cardiac Involvement. Cureus 2024;16.
3. Mehta P, Kharouf F, Carrizo-Abarza V, Li Q, Akhtari S, Harvey P, et al. Prevalence, clinical associations and outcomes of pericarditis in systemic lupus erythematosus: insights from the University of Toronto Lupus Clinic. Rheumatol 2025:keaf669.
4. Khawar Z, Herrera-Gonzalez MB, Mirza M, Mirza N, Suleiman A, Herrera-Gonzalez M. Cardiac Adaptation in Lupus: A Case of Massive Pericardial Effusion With Preserved Hemodynamics. Cureus 2025;17.
5. Dobos MC, Ungurean V, Costan DE, Russu M, Ouatu A, Morariu PC, et al. Cardiovascular Involvement in Systemic Lupus Erythematosus: Focus on Arrhythmias. Diagnostics 2026;16:372.
6. Barradas MI, Coutinho dos Santos I, Duarte F, Tavares A, Martins D. Systemic disease presenting as cardiac tamponade: a case report. Eur Hear Journal-Case Reports 2024;8:ytae137.
7. Stoichitoiu LE, Ionescu GD, Neatu I, Baicus C. Causes of polyserositis: a systematic review. J Pers Med 2023;13:834.
8. Li X, Luo K, Yang D, Hou C. A case report of systemic lupus erythematosus complicating interstitial lung disease and thickened pericardium treated with tofacitinib. Medicine (Baltimore) 2024;103:e39129.
9. Fanouriakis A, Kostopoulou M, Andersen J, Aringer M, Arnaud L, et al. EULAR recommendations for the management of systemic lupus erythematosus: 2023 update. Ann Rheum Dis 2024;83:15-29.
10. Wassif H, Ghandakly E, Layoun H, Bhalla JS, Littlejohn E, Wang TKM, et al. Autoimmune pericarditis: diagnosis and new therapeutics. Curr Cardiol Rep 2025;27:114.