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Correspondence to:
Saifat Ullah Khan
Email: skhan1@hamad.qa
ORCID: 0000-0001-7531-0837

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Case Report

Cardiac Tamponade as an Initial Presentation of Systemic Lupus Erythematosus: A Case Report

Saifat Ullah khan[1], Muftah Othman[1], Zishan Nasir[2], Syed Hidayat Ali[3], Fahad Zamir[4], Nour jaouni[4]

1 Senior Consultant, Nephology Unit, Hazm Mebaireek Hospital, Doha, Qatar
2 Associate Consultant, Nephology Unit, Hazm Mebaireek Hospital, Doha, Qatar
3 Specialist, Nephology Unit, Hazm Mebaireek Hospital, Doha, Qatar
4 Medical Student, Department of Medicine, Weill Cornell Medical College, Doha, Qatar

ABSTRACT

Systemic lupus erythematosus (SLE) is an autoimmune disease that can affect any organ in the body. Patients with SLE may present with a wide range of cardiac symptoms due to the involvement of the pericardium, myocardium, heart valves, conduction system, and coronary arteries. Pericarditis and pericardial effusion are some of the most frequently encountered cardiac complications in SLE. Cardiac tamponade as the first presenting sign of SLE is rare, but it is crucial to identify it promptly to ensure timely treatment. We report a case of a 37-year-old male who was admitted with a 1-month history of progressive shortness of breath and chest pain. He had swellings on his face and feet and gave a history of passing foamy urine. Echocardiography confirmed cardiac tamponade. Additional laboratory investigations demonstrated low C3 and C4 complements, positive antinuclear antibodies (ANA), anti-dsDNA, and anti-Smith antibodies. His renal biopsy revealed features of diffuse proliferative and membranous lupus nephritis with cellular crescents. After undergoing an emergency echo-guided pericardiocentesis, he was treated with intravenous methylprednisolone, oral prednisolone, mycophenolate mofetil, and hydroxychloroquine. He was released from the hospital and is now being followed as an outpatient in the nephrology clinic.

Key words: Systemic lupus erythematosus, cardiac tamponade, lupus nephritis, pericardiocentesis, pericarditis

INTRODUCTION

Systemic lupus erythematosus (SLE) is a life-threatening autoimmune disorder that can affect multiple organ systems. It requires early recognition to enable early and effective intervention. [1] SLE is more common in younger women, with a female-to-male ratio of 10:1. [2] Pericarditis, with or without pericardial effusion, occurs in approximately 25% of patients with SLE. [3] Large pericardial effusion leading to cardiac tamponade as an initial presentation of SLE is uncommon. The diagnosis can be made by the characteristic physical appearance of a SLE patient who has cardiomegaly, characteristic echocardiographic findings of cardiac tamponade, in combination with Systemic Lupus International Collaborating Clinics (SLICC) criteria.

This case report describes a 37-year-old man who initially presented with cardiac tamponade, revealing underlying SLE and lupus nephritis. We report this case to raise awareness and enhance clinicians' knowledge in diagnosing this uncommon presentation of SLE.

CASE REPORT

A 37-year-old male patient, who has no prior medical history, arrived at the emergency unit with a 1-month history of breathlessness and chest pain. Over the past month, he had also developed facial and foot swelling. He reported the passage of foamy urine, although there was no alteration in the color of his urine. He denied experiencing any joint pain or swelling. One week before he visited the emergency unit, he noted a considerable increase in chest pain, which was accompanied by dyspnea upon exertion.

Upon admission, the blood pressure recorded was 152/110 mmHg, accompanied by a temperature of 37.7°C, a respiratory rate of 19 breaths per minute, and an oxygen saturation level of 99% in ambient air.

The electrocardiogram indicated low QRS voltage in the extremity leads (**Figure 1**), while the chest radiograph revealed cardiomegaly (**Figure 2**). A urinalysis conducted via dipstick demonstrated +3 protein and +2 red blood cells. Further laboratory tests indicated low hemoglobin 10.0 gm/dl, significantly low serum albumin level of 17 gm/L, and normal renal function. The transthoracic echocardiography showed pericardial effusion along with signs of elevated intrapericardial pressure (early tamponade physiology; **Figure 3**). The following day after admission, he was moved to the intensive care unit due to experiencing chest pain and low oxygen saturation. An emergency echocardiogram revealed a large circumferential pericardial effusion accompanied by a swinging heart and mild right atrial systolic collapse. He underwent an emergency echocardiogram-guided pericardiocentesis, during which 900 mL of serosanguinous fluid was extracted. The pericardial drainage tube was left in place (**Figure 4**).

Considering the history, clinical evaluation, and laboratory results, SLE was deemed likely. Further laboratory tests revealed decreased complement factors C3 and C4, as well as a protein-to-creatinine ratio exceeding 1000 mg/mmol. To determine the cause of the pericardial effusion, additional serological tests were performed, which showed positive results for anti-dsDNA antibodies, anti-Smith antibodies, and antinuclear antibodies (ANA) at a high titer of 1:1280. Urinalysis, immunological studies, and serological tests strongly suggested lupus nephritis.

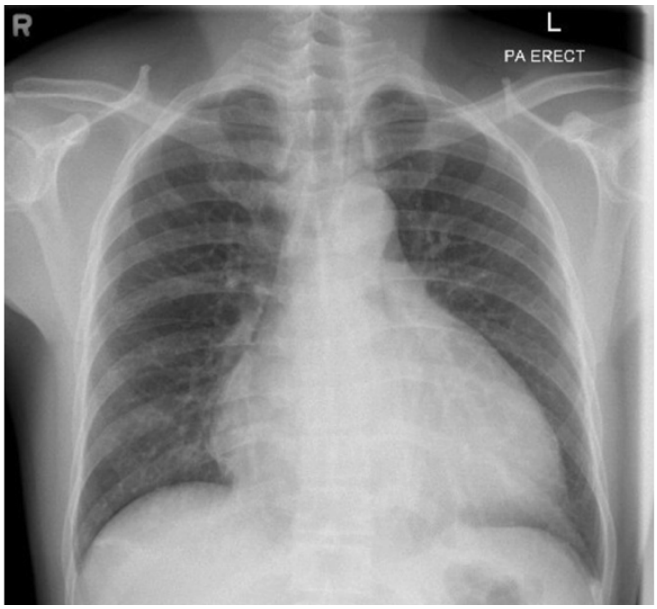

Figure 2: Posteroanterior (PA) erect chest radiograph showing clear lung fields, with cardiomegaly.

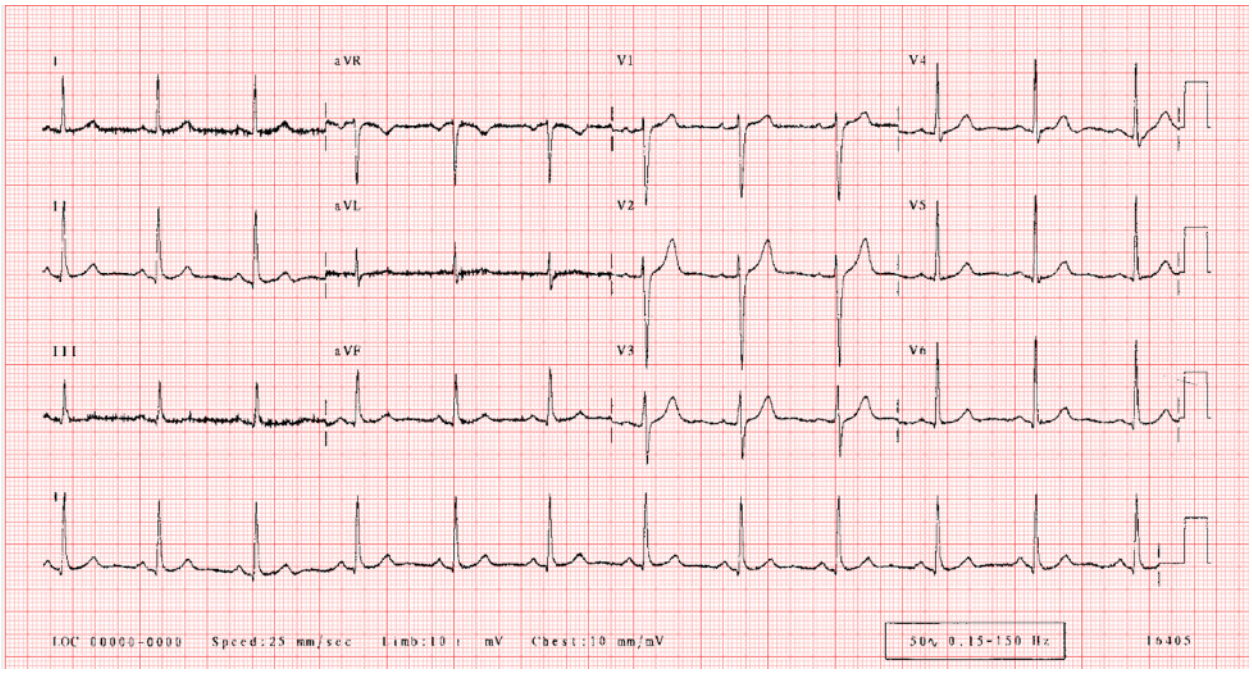

Figure 1: Sinus rhythm with low QRS voltage in extremity leads.

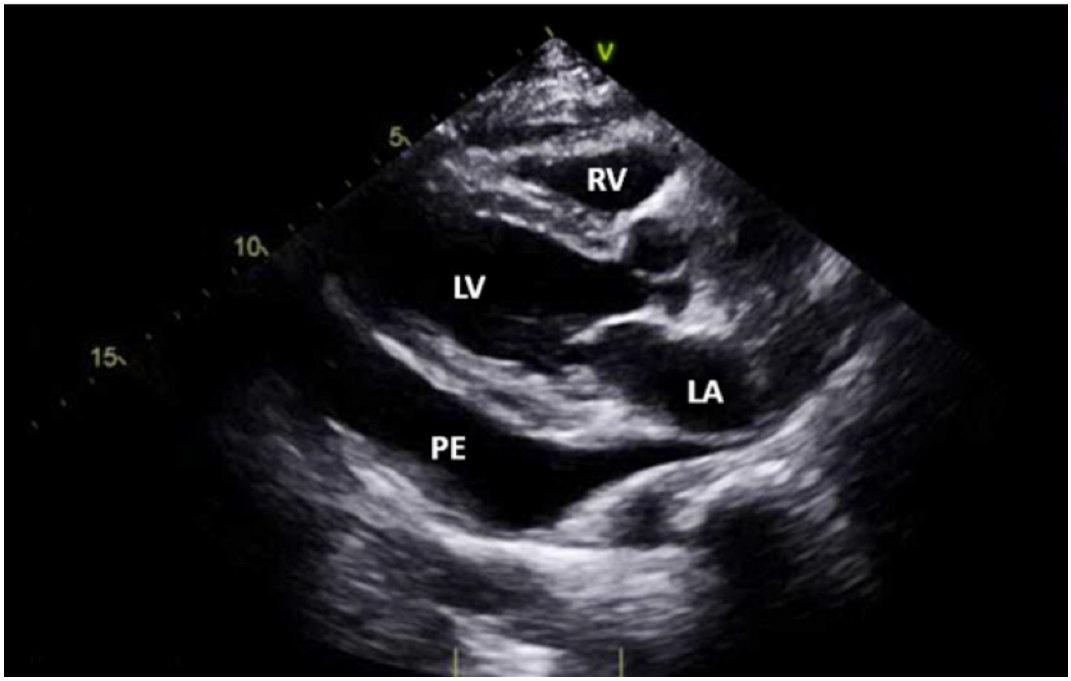

Figure 3: Transthoracic 2-dimensional echocardiogram showing a large pericardial effusion (PE).

Figure 4: Pericardiocentesis revealed a hemorrhagic-appearing pericardial effusion.

Following pericardiocentesis, his symptoms improved. Analyses of the pericardial fluid indicated the presence of inflammatory cells, but there was no sign of malignancy, and cultures were negative. He subsequently underwent an ultrasound-guided renal biopsy, which revealed diffuse proliferative and membranous lupus nephritis with cellular crescents comprising 50%. He was treated with intravenous methylprednisolone at a dosage of 1 gm per day for three days, followed by oral prednisolone at a daily dosage of 60 mg, hydroxychloroquine at 200 mg orally, and mycophenolate mofetil at 1500 mg twice daily. He was discharged after demonstrating a positive clinical response, with plans for follow-up at the nephrology clinic.

DISCUSSION

SLE is an autoimmune disorder with a highly variable worldwide incidence that ranges from 1.4 to 15.13 cases per 100,000 person-years. [4] SLE is characterized by a wide-spectrum clinical presentation affecting virtually every organ system, with a characteristic pattern of flare and remission. Cardiac complications are common in SLE, representing about 50% of cases. [5] The most frequent cardiac manifestation of SLE is pericarditis, with 25% of patients experiencing symptomatic pericarditis at some stage of the disease. [6] The first documented case of SLE accompanied by pericardial effusion was reported in 1949. [7] Large pericardial effusion leading to cardiac tamponade as an initial presentation of SLE is uncommon, with prevalence widely varying between 1% and 27%. [8,9] The reason for the variation in the prevalence is unknown; it could be explained by the worldwide variation of SLE incidence.

The common presenting symptoms reported in numerous studies, [10–13] including our case report, were shortness of breath and chest pain. The occurrence of cardiac tamponade in patients with SLE is unpredictable. However, Chourabi et al. found an association between cardiac tamponade in SLE patients and female sex, anemia, renal involvement, pleuritis, elevated erythrocyte sedimentation rate, and decreased C4 levels. [14] In our case, anemia, renal involvement, and decreased C4 levels were also present; however, our patient was male.

In most cases, the SLE patient usually seeks medical assistance long before he develops cardiac tamponade. Diagnosing SLE in a patient who presents with cardiac tamponade can pose significant challenges and may be overlooked by the treating clinicians, particularly if the typical signs of SLE are absent at the time of presentation and the patient is male. Therefore, a

high index of suspicion is required to avoid delayed or missed diagnosis of SLE in patients presented with cardiac tamponade. In such cases, a comprehensive approach that includes a detailed medical history, thorough physical examination, and targeted laboratory investigations is essential to refine the differential and identify the underlying cause. Echocardiography is the diagnostic modality of choice for evaluating pericardial effusion and confirming a diagnosis of cardiac tamponade. While the Systemic Lupus International Collaborating Clinics (SLICC) criteria can be used to diagnose SLE. [15] In our patient, SLE was suspected a few days after admission. The diagnosis of cardiac tamponade was made by echocardiography, followed by a thorough workup that included laboratory tests, including ANA and anti-dsDNA antibody titers, and measurements of complement levels (C3 and C4). The positive results of these tests, in addition to the results of renal biopsy, ultimately confirmed the diagnosis of SLE.

Cardiac tamponade is a critical medical condition that necessitates prompt intervention, typically involving the removal of pericardial fluid, most commonly through pericardiocentesis.

The treatment of lupus-related cardiac tamponade primarily includes anti-inflammatory drugs, typically comprising high-dose corticosteroids, antimalarials, and non-steroidal anti-inflammatory agents. [13] Furthermore, mycophenolate and azathioprine are frequently utilized in severe cases of lupus myocarditis or nephritis. [16] Our patient was treated with steroids, hydroxychloroquine, and mycophenolate mofetil along with adjunct pericardiocentesis, resulting in a favorable clinical outcome.

CONCLUSIONS

This case illustrates that cardiac tamponade can be the initial presentation of SLE, even in male patients, and may occur alongside nephritis. Healthcare professionals should take SLE into account when assessing patients who present with cardiac tamponade of unknown origin. Timely diagnosis and targeted treatment of SLE-related cardiac tamponade are crucial to prevent serious consequences.

PATIENT CONSENT

Written informed consent was obtained from the patient for publication of this case report.

AUTHORS' CONTRIBUTION

All authors have significantly contributed to the work, whether by following the case at the bedside, conducting literature searches, drafting, revising, or critically reviewing the article. They have given their final approval of the version to be published, have agreed with the journal to which the article has been submitted, and agree to be accountable for all aspects of the work.

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CONFLICT OF INTEREST

None.

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