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A Case of Systemic Lupus Erythematosus without Antiphospholipid Syndrome Causing Superior Vena Cava Syndrome

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ABSTRACT

Systemic lupus erythematosus (SLE) is an autoimmune disease with multisystem involvement. Superior vena cava (SVC) syndrome is mainly caused by malignant tumors such as lung carcinoma, lymphoma, and metastatic tumors. We report a 20-year-old woman who was admitted with features of SVC syndrome secondary to SVC thrombus. Further evaluation confirmed the diagnosis of SLE without associated antiphospholipid syndrome (APS). The patient was treated with heparin with oral anticoagulant, steroids, and hydroxychloroquine. Complete resolution of thrombus was documented within a few weeks. SVC thrombosis as an initial presenting feature of SLE without associated APS has not been reported so far in the literature.

Superior vena cava (SVC) syndrome is a relatively common clinical condition. However, SVC syndrome as the presenting feature of systemic lupus erythematosus (SLE) is very uncommon. It is even rarer in SLE in the absence of antiphospholipid syndrome (APS). Thrombosis as a clinical manifestation of SLE accounts for 15% of cases. Among them, venous thrombosis accounts for 10%, while the rest is due to arterial thrombosis.[1] We report a rare and interesting case of SVC thrombosis due to SLE without APS.

CASE REPORT

A 20-years-old married woman was admitted to the Department of General Medicine at RG Kar Medical College, Kolkata, in 2018 with the complaint of recent onset swelling of face and neck accompanied by polyarthralgia and constitutional symptoms for two weeks. There was no chest pain, cough, or hemoptysis; but she was mildly short of breath. There was no history of photosensitivity, rash, oral ulcers, alopecia, oliguria, hematuria, or Raynaud's phenomenon. She had no history of any spontaneous pregnancy loss, nor did she use any oral contraception.

On examination, she was pale and had generalized lymphadenopathy involving the cervical, axillary, and inguinal areas. Face and anterior part of neck appeared swollen with non-pulsatile and raised jugular venous pressure. Her temperature was mildly raised (37.6 °C) with tachycardia but no tachypnea. Respiratory system examination revealed bilateral dull percussion notes along with diminished breath sounds in both lung bases. Her liver and spleen were non-palpable, and the rest of the systemic examinations were within normal limits. Blood counts, renal function tests, and liver function tests were normal. Erythrocyte sedimentation rate was mildly raised with normal C-reactive protein. Prothrombin time and activated partial thromboplastin time were normal. Urine examination showed normal albumin-creatinine ratio without any active sediments. Bilateral exudative pleural effusion was present with a normal level of adenosine deaminase and negative nucleic acid amplification tests for *Mycobacterium tuberculosis*. Lymph node biopsy showed features of reactive hyperplasia. Contrast-enhanced computed tomography of the thorax revealed SVC thrombus with bilateral pleural effusion [Figure 1].

Transthoracic echocardiography showed a thrombus extending from the SVC to the right atrium. Antinuclear antibody (ANA) was positive in 1:320 titer (Hep2 method) with a speckled pattern. Extractable nuclear antigen profile was suggestive of strongly positive anti-ribosomal P antibody.

Complement C3 level was low. Direct Coomb test was positive. Anti-beta2-glycoprotein and

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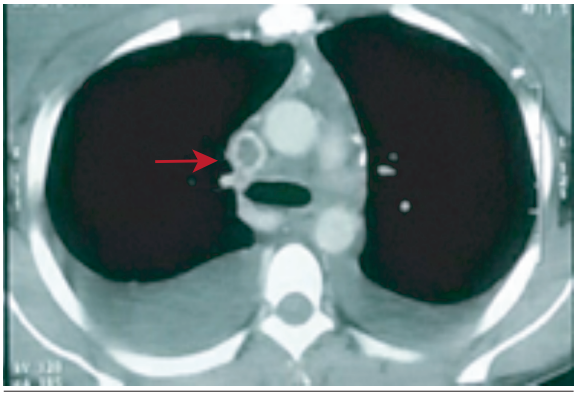

Figure 1: Contrast-enhanced computed tomography thorax showing superior vena cava thrombus.

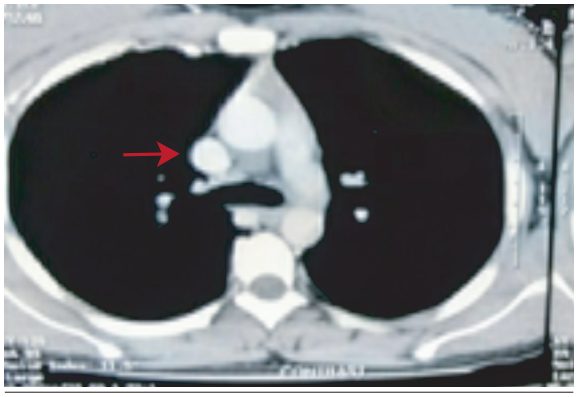

Figure 2: Contrast-enhanced computed tomography thorax showing resolution of thrombus after successful treatment.

Table 1: Summary of relevant laboratory investigations.

Tests	Results	Normal range
Hemoglobin	12.9	12–16 g/dL
WBC	7800	4000–11 000/µL
Platelet count	2.9	1.5–4.5 lakh/ µL
Creatinine	96	59–104 umol/L
ESR	42	< 20 mm (first hour)
CRP	0.7	Up to 0.8 mg/dL
Serum protein	7	6.6–8.3 g/dL
Serum LDH	204	< 248 U/L
PT	11 (INR-1)	11 seconds
APTT	36	30–40 seconds
Urine ACR	24	< 30
Pleural fluid protein	4.9	1–2 g/dL
ANA(Hep2 method)	Positive 1:320 titer speckled pattern	-
Anti-ribosomal P	+++	0 Negative (+) Borderline + Positive ++Positive +++Strongly positive
Complement C3	26 mg/dL	90–180 mg/dL
Anti-beta2-glycoprotein and antiphospholipid antibody	Negative	
DCT	Positive	-

WBC: white blood cells; ESR: erythrocyte sedimentation rate; CRP: C-reactive protein; LDH: lactate dehydrogenase; PT: prothrombin time; INR: international normalized ratio; APTT: activated partial thromboplastin time; ACR: albumin-creatinine ratio; ANA: antinuclear antibody; DCT: direct Coombs test.

antiphospholipid antibodies were negative. A summary of the results of her laboratory tests is shown in Table 1.

Based on the clinical and laboratory findings, the patient was diagnosed with SLE with SVC thrombosis. She was treated with oral steroids (prednisolone 1 mg/kg body weight), hydroxychloroquine, and subcutaneous low molecular weight heparin with oral anticoagulant. Complete resolution of intracardiac and SVC thrombus was documented within two weeks with significant improvement in her symptoms [Figure 2]. The patient is still being followed-up in our outpatient department. She is on oral anticoagulant with regular monitoring of prothrombin time and markers of lupus flare.

DISCUSSION

SLE is a prothrombotic condition, and several factors in the form of platelet hyperfunction, lupus nephritis, elevated homocysteine, the presence of antiphospholipid antibodies, and high disease activity are thought to be responsible.[2,3] Inflammation is the main risk factor for venous thrombosis in SLE without APS by affecting multiple steps of blood coagulation like initiation, propagation, and regulation.[4] Inflammation can also initiate thrombosis by different mechanisms like the expression of tissue factors, decreasing the fibrinolytic activity by upregulating the production of plasminogen activator inhibitor, downregulation of thrombomodulin, and a decrease of protein S. Activation of the complement factors along with an increase in proinflammatory cytokines occur

in active lupus which can aggravate thrombosis.[5] Independent risk factors like elevated plasma homocysteine level lead to atherosclerosis, arterial, and venous thrombosis.[6] Diabetes mellitus, hypertension, and dyslipidemia are seen in SLE patients, along with glucocorticoids, which are commonly used for the management, play a key role in the formation of thrombosis, as elaborated in numerous studies.[7]

Malignancy is the most common cause (responsible for > 90% of the cases) of SVC syndrome. A few cases of SVC syndrome have been reported in association with connective tissue disorders or vasculitis. SVC thrombosis is an uncommon but well-recognized manifestation of Behçet's disease.[8] Behçet's disease has also been reported to be associated with narrowing of SVC lumen due to vasculopathy without thrombosis.[9] SVC syndrome due to intravascular thrombosis has been reported in a patient with rheumatoid arthritis (RA) without APS indicating that RA itself may be the cause of hypercoagulable state in that case.[10] A case of SVC syndrome in a patient of SLE with longstanding classic RA was reported where the etiology was external compression of SVC by mediastinal lymphadenopathy.[11] A similar case was also reported by Kingetsu et al,[12] SVC syndrome (caused by thrombosis) as a presenting feature of SLE is comparatively rare and whatever few cases are reported to date are all cases of lupus associated with APS.[13,14] A case of SLE associated with anticardiolipin antibodies presenting as SVC syndrome has been reported previously.[13] The 19-year-old woman described in this report had thrombotic occlusion of SVC, which successfully responded to immunosuppressives and intravenous thrombolytics. Similarly, another case of asymptomatic SVC thrombosis as a manifestation of SLE with APS (also known as secondary APS) in a 34-year-old woman with recurrent spontaneous abortions and hemolytic anemia has been reported.[14] This patient had no overt signs of SVC obstruction due to the development of collateral vessels. Moreover, SVC thrombosis has also been reported in association with drug-induced lupus with circulating anticoagulants.[15] Primary APS has been reported to be associated with SVC thrombosis in the literature.[16–18]

However, our case of SVC syndrome as a presenting feature of SLE without associated APS is probably the first case globally.

CONCLUSION

SVC obstruction due to thrombosis, as a presenting feature in a young female with SLE, is relatively rare. It does not always indicate associated APS, as SLE itself is a highly prothrombotic state. Connective tissue disorders have a wide spectrum of presentations and protean manifestations. Hence, a high degree of suspicion is required while evaluating these cases. SVC obstruction is not an uncommon clinical entity, but the determination of the underlying pathophysiology and adjusting the therapy accordingly may be challenging at times.

Disclosure

The authors declared no conflicts of interest. Written informed consent was obtained from the patient and her kin.

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