A Rare Cause of Superior Vena Cava Syndrome

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INTRODUCTION

Superior vena cava (SVC) syndrome is a relatively common clinical condition. But, 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 hereby report a very rare and interesting case of SVC thrombosis due to SLE without APS.

CASE PRESENTATION

A 20-years-old married woman was admitted in 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 generalised lymphadenopathy involving the cervical, axillary and inguinal areas. Face and anterior part of neck appeared swollen with non-pulsatile & raised jugular venous pressure. 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. Liver, spleen were non palpable and rest of the systemic examination were within normal limits. Blood counts, renal function test & liver function tests were within normal limits. Erythrocyte sedimentation rate (ESR) was mildly raised with normal C-reactive protein. Prothrombin time (PT) & activated partial thromboplastin time (APTT) was normal. Urine examination showed normal albumin-creatinine ratio (ACR) without any active sediments. Bilateral exudative pleural effusion was present with normal level of adenosine deaminase (ADA) & negative nucleic acid amplification tests for Mycobacterium tuberculosis. Lymph node biopsy showed features of reactive hyperplasia. Contrast enhanced Computed tomography thorax revealed superior vena caval thrombus with bilateral pleural effusion (**Figure 1**).

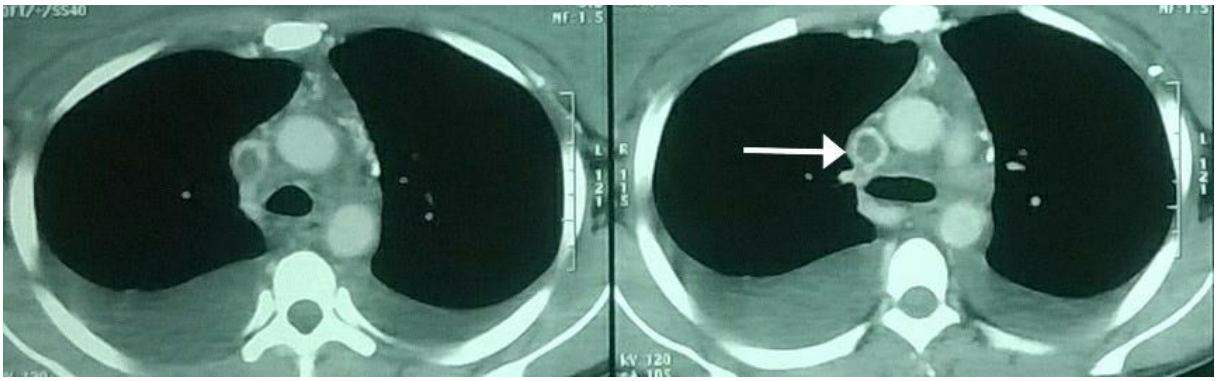

Figure 1-Contrast enhanced computed tomography(CECT) thorax showing superior vena cava thrombus.

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

Complement C3 level was low. Direct coombs test was positive. Anti Beta2 glycoprotein and anti-phsopholipid antibody were negative. A summary of the results of her laboratory tests is shown in **Table 1.**

Table 1: Summary of relevant laboratory investigations

Tests	Results	Normal Range
Hemoglobin	12.9	12-16 g/dl
WBC	7800	4000-11000/microL
Platelet Count	2.9	1.5-4.5 lakh/ microL
Creatinine	96	59-104 umol/L
ESR	42	<20mm (first hour)
CRP	0.7	Upto 0.8mg/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	1-2g/dl
ANA**(Hep2 method)**	**Positive 1:320 titre speckled pattern**	-
Anti-ribosomal P	+++	0 Negative (+) Borderline + Positive ++Positive +++Strongly positive
Complement C3	**26 mg/dl**	**90-180mg/dl**
Anti Beta2 glycoprotein & anti-phsopholipid antibody	Negative	<20 RU/ml
DCT	**Positive**	-

WBC: White blood count; ESR: Erythrocyte Sedimentation Rate; LDH: Lactate dehydrogenase; CRP: C-reactive protein; PT: Prothrombin time; APTT: activated partial thromboplastin time; ACR: albumin-creatinine ratio; ANA: Anti nuclear antibody.

Based on the clinical and laboratory findings , the patient was diagnosed as Systemic lupus erythematosus (SLE) with superior venacaval thrombosis. She was treated with oral steroids(Prednisolone 1mg/kg body weight),hydroxychloroquine, subcutaneous low moleculer weight heparin with oral anticoagulant. Complete resolution of intra cardiac 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 & markers of lupus flare.

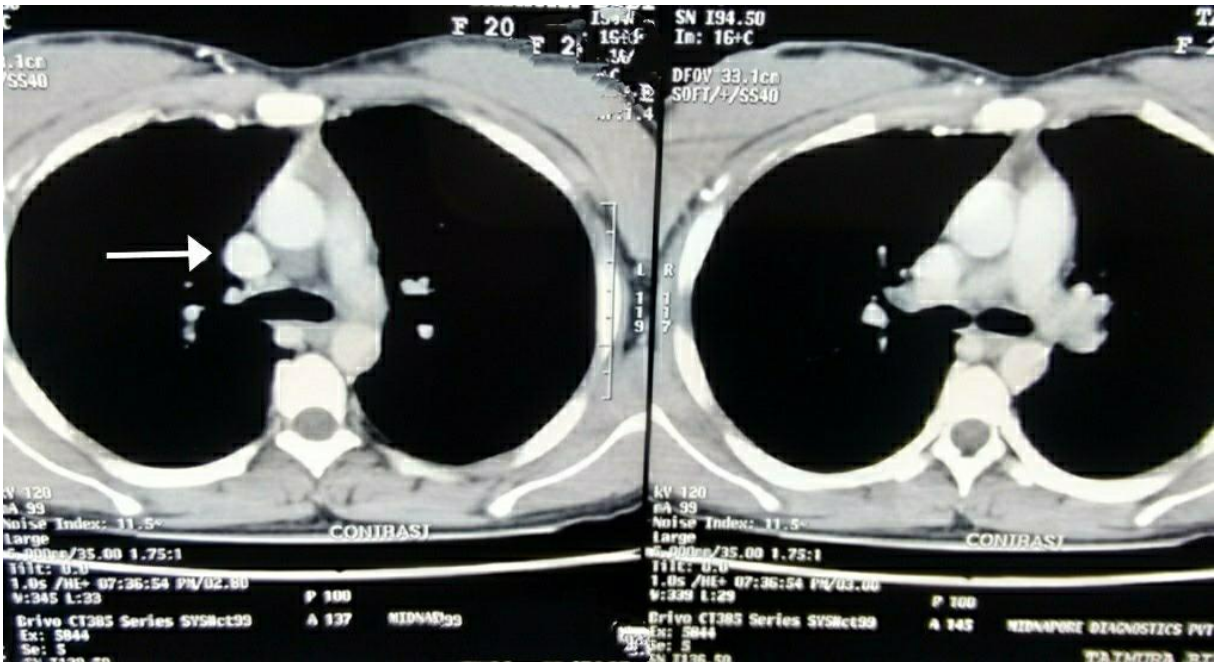

Figure 2 -Contrast enhanced computed tomography(CECT) thorax showing resolution of thrombus after successful treatment.

DISCUSSION

Systemic lupus erythematosus(SLE) is a prothrombotic condition and several factors in the form of platelet hyperfunction,lupus nephritis,elevated homocysteine,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 expression of tissue factors, decreasing the fibrinolytic activity by upregulating the production of plasminogen activator inhibitor(PAI) ,downregulation of thrombomodulin and a decrease of protein S. Activation of the complement factors along with increase in proinflammatory cytokines occur in active lupus which can aggravate thrombosis.[5] Independent risk factors like elevated plasma homocysteine level leads to atherosclerosis, arterial and venous thrombosis.[6] Diabetes mellitus, hypertension and dyslipidemia seen in SLE patients along with glucocorticoids which is 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 more than 90% of the cases) of SVC Syndrome. But 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 of 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 rheumatoid arthritis was reported by Van den Brink H et al where the etiology was external compression of SVC by mediastinal lymphadenopathy.[11] A similar case was also reported by Kingetsu I et al.[12] SVC syndrome (caused by thrombosis) as a presenting feature of SLE is comparatively rare & whatever few cases are reported till today 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 by Yunus Erdem et al.[13] A 19-year-old woman described in this report had thrombotic occlusion of SVC which successfully responded to immunosupressives & 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 lady with recurrent spontaneous abortions & hemolytic anemia has been reported by Bansal P et al.[14] This patient had no overt signs of SVC obstruction due to development of collateral vessels.Moreover, SVC thrombosis has also been reported in association with drug induced lupus with circulating anticoagulant.[15] PrimaryAPS has been reported to be associated with SVC thrombosis in literature.[16,17,18]

However, our case of SVC syndrome as a presenting feature of SLE without associated APS is probably going to be 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 Antiphospholipid syndrome (APS), as SLE itself is a highly prothrombotic state. Connective tissue disorders have a wide galaxy 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 determination of the underlying pathophysiology and adjusting the therapy accordingly may be challenging at times.

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