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# Budd-Chiari Syndrome and Systemic Lupus Erythematosus – Diagnosis and Treatment: A Case Report

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## Abstract

**Objective:** Systemic lupus erythematosus (SLE) is a rheumatologic autoimmune disease that damages the tissues of the body through the autoantibodies. The disease is clinically along with acute or gradual onset, recrudescence and blackout periods. SLE predominantly affects young women in childbearing age but both sexes in all ages are at risk for this disease. Budd- Chiari Syndrome is Major hepatic veins obstruction or inferior vena cava (IVC) especially in inside liver and in above liver segments. This syndrome may be present acutely, with rapid enlargement of the liver, ascites, and abdominal pain.

**Case report:** The patient is a 23 year-old woman, married and has one child. After eight months of diagnosis of SLE and Medical treatment in this period, she referred to hospital due to digestive problems, abdominal swelling and pain and full tests of blood, urine, endoscopy, ultrasound, X-rays and CT scans were performed on patients and the results demonstrate the Budd- Chiari Syndrome .

**Results:** According to the experimental results, Anti nuclear Antibody (ANA) = positive, Anemia, Hypoalbuminemia, proteinuria, hyper bilirubinemia Bailey and several other parameters were observed. Imaging results also showed venous thrombosis in the IVC. Patient with a very bad abdominal pain and ascites and underlying SLE disease referred to the hospital. After performing clinical examinations and various tests Budd-Chiari Syndrome was diagnosed. For the treatment TAP was used in order to control

ascites fluid and various medications. After 2 weeks of diagnosis, patients got nephrotic syndrome.

**Conclusion:** Patient's response to medicines: Cyclophosphamide, Prednisolone, Warfarin, Furosmide and Spironolactone are positive and the patient's condition is improving.

**Keyword:** Systemic Lupus Erythematosus – Budd Chiari Syndrome- Nephrotic Syndrome

## 1. Case Presentation

In SLE disease involving the skin, joints, kidneys, curtain lining, lungs, heart, blood and central nervous system is common that if more than 3 clinical signs will be seen in a patient with further clinical testing, the diagnosis of disease can be proved. The greatest value in the diagnosis of SLE disease is related to the clinical examinations.

One of the most important Laboratory indicators for lupus disease is the ANA test and its positivity indicates that there is cells anti-nuclear antibody which indicates activation of the immune system to develop autoantibody (1).

Laboratory findings related to lupus:

| | | |
|---|---|---|
| ANA | 10 | Positive > 1.2 , Negative < 0.8 |
| Antids – DNA | 0.4 | Positive >1.1 , Negative< 0.9 |
| $C_3$ | 36 mg/dL | normal = 90 -180 mg/dL |
| C4 | 2 mg/dL | normal = 10 -40 mg/dL |
| $CH_{50}$ | 48.6 Units | normal = 101 -300 Units |
| A. cardio (IgG) | 20 U/mL | Positive >10 U/mL |
| A. cardio (IgM) | 18.5 U/mL | Positive >10 U/mL |

Then considering the above findings and clinical examination, the patient was diagnosed with SLE. After 8 months of diagnosis of SLE patients referred to the hospital with weakness, lethargy, edema of the lower extremities, mouth sores as Aphtha, melena, bloating and abdominal pain with anorexia, frequent non-hematologic vomiting.

It should be mentioned more abdominal pain was around the navel and hypogastrium and exacerbated by eating.

Also in clinical examinations after few days, purple stria on the abdominal skin and Malar rash on the maxillary and feet Livedo reticularis was observed.

Due to odynophagia and long-term corticosteroid use during 8 month SLE treatment the possibility of candida esophagitis was considered.

The following tests were requested for patients

### 1. Complete Blood Test

- Hematology:

| | | |
|---|---|---|
| WBC | $mm^3$ / 1000× 8.5 | Normal = 4-10 × 1000 / $mm^3$ |
| RBC | 4.46 × $10^6$ /$mm^3$ | F: 4.2 – 5.4 × $10^6$ / $mm^3$ |
| Hb | 11.2 mg/dL | F: 12 – 16 mg/dL |
| Hct | 37.40% | F: 36 – 46 % |
| M.C.V | 84 FL | Normal = 66 - 96 FL |
| M.C.H | 25 Pgm | Normal = 26 - 32 Pgm |
| M.C.H.C | 31% | Normal = 32 – 36 % |

| | | |
|---|---|---|
| Platelet | $mm^3$ / 1000× 237 | Normal = 140- 440 × 1000 / $mm^3$ |
| RDW | 14.10% | Normal = 11 – 16 % |
| ESR 1st hr | 10 | F < 20 |
| ESR 2 St hr | 37% | |
| PT | 13 Sec | Normal = 11 -13 Sec |
| PTT | Sec 28 | Normal = 30 -45 Sec |
| INR* | 1.07 Index | Normal = 0.9 -1 Index |

*INR: International Normalized Ratio

- Immunology:

| | | |
|---|---|---|
| HBS Ag | Negative | |
| HBS Ab | > 1000 mIU/mL | mIU/mL vaccination > 20 |
| HCV Ab | Negative | |
| HBC Ab | 0.2 | Negative < 0.9 |

- Hormones:

| | | |
|---|---|---|
| CA- 125 | 160U/mL | normal= 0-39 U/mL |
| CA19-9 | 36 IU/mL | normal= 0-25 IU/mL |
| T.S.H | 2.3 mic IU/mL | normal= 0.39-6.19 mic IU/mL |

- Blood biochemistry:

| | | |
|---|---|---|
| Total Bilirubin | 1.9 mg/dL | Adults: 0.1-1.2mg/dL |
| Direct Bilirubin | 0.3 mg/dL | Normal: 0-0.4mg/dL |
| Indirect Bilirubin | 1.6 mg/dL | Normal: 0.1- 0.8mg/dL |
| Albumin | 2.4 mg/dL | Normal: 3.5-5.2 mg/dL |
| Total protein | 4.4 g/dL | Normal: 6.6-8.7g/dL |
| Ca total | 6.9 | Normal: 8.6-10.3 |
| Amylase | 22 IU/L | Normal: up to 100 IU/L |
| Lipase | 86 IU/L | Normal: up to60 IU/L |
| SGOT (AST) | 17 IU/L | F: 0-37 IU/L |
| SGPT (ALT) | 15 IU/L | F: 0-31 IU/L |
| ALP | 186 IU/L | Adults: 64-306 IU/L |
| Blood Sugar | 83 mg/dL | Normal: 70-135 mg/dL |
| Urea | 20 mg/dL | F: 15-40 mg/dL |
| Creatinine | 1.3 mg/dL | Normal: 0.7-1.4mg/dL |
| Serum Na | 140 mEq/L | Normal: 136-145 mEq/L |
| Potassium | 4 mEq/L | mEq/L5 -Normal: 3.6 |

**2. Analysis of Urine**

Color: yellow, Appearance: Semi clear.

- Urine biochemistry:

| | | |
|---|---|---|
| Urine V/ 24h | 600 mL/ 24h | Normal: 800-2000 mL/24h |
| Urine G/ 24h | 0.3 g/24h | Normal: 0.5-1.5 g/ 24h |
| Urine Pr/24h | 437 mg/ 24h | Normal: 40-150 mg/24h |
| Protein | +++ | |
| Blood / Hb | +++ | |
| PH | 6 | |

Also, glucose, ascorbic acid, ketone, Bilirubin, Urobilinogen and Nitrite was negative.

- Urinary Bacteriology:

Urine culture is negative

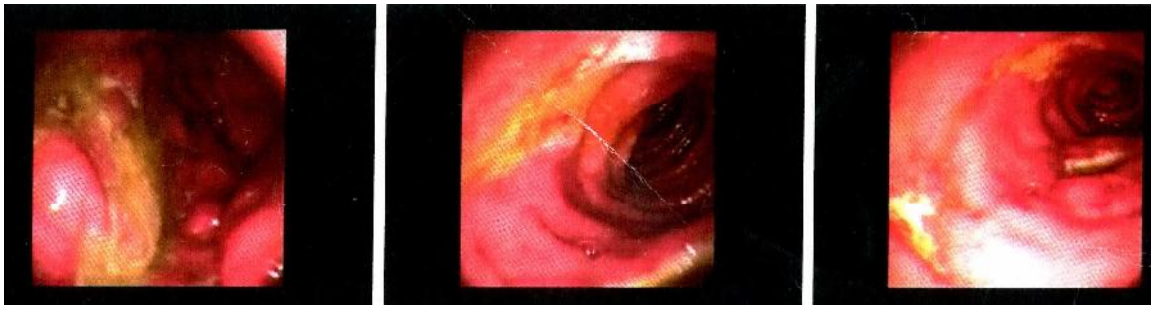
According to the observed Hypoalbuminemia, proteinuria, and edema, for the patient nephrotic syndrome was diagnosed.

### 3. Stool Tests

Stool is Parasitological negative.

### 4. Endoscopy

There was Mild edema in proximal of stomach and ulcers in duodenal but no varices were observed.



A 1.5 * 1.5 cm ulcer in junction of D1 and D2 and two other shallow in D1.Normal D2

### 5. Chest Radiology

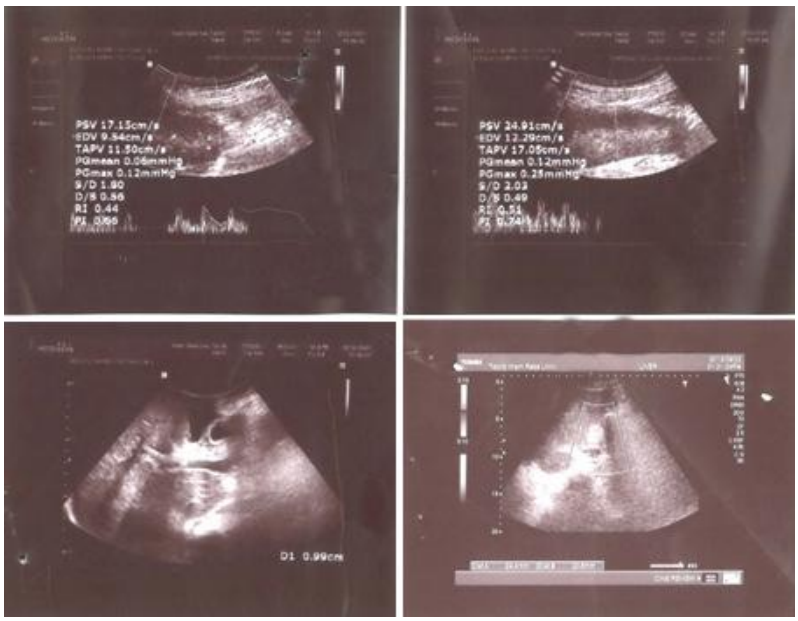
Picture of the heart and mediastinum were normal and lateral aspects of both are open.

### 6. Electro Cardio Gram (ECG)

Heart Rate was 60 beats/minute - sinus rhythm - no atrial hypertrophy and ventricular hypertrophy is Low voltage.

### 7. Ultrasonography of the Abdomen, Pelvis, Appendix

Abundant free fluid was seen in cul de sac and thin- walled echofree cysts with 29×22 mm dimensions is evident in the right adnexa.



### 8. Abdomen and Pelvis Spiral Scan with Injection Segment

IVC is very squeezed in inner liver. liver is quite enhance heterogeneous.

A hypodense area with 10 mm diameter in liver VI and a fairly circular hypodense area with 30mm diameter with a little distance are visible. There is abundant ascitic fluid in the abdomen and pelvis. Abnormal enhancement liver is consistent with the Budd Chiari syndrome.

### 9. B-Mode, Color Doppler and Spectral Doppler

Liver parenchymal echogenisity is rough and parenchymal. Echogen area with dimension of 24 × 23 mm was observed in livers Segment I. Two hyper-echo mass with clear diameters of 27 × 13 mm was observed in the right lobe of the liver that was suggestive of a hemangioma. The main liver veins are around natural bloodstream area, but in central region liver veins route are not identifiable and evacuated through the collaterals to IVC. Also in spectral waveform vensous waves are monophasic. IVC in distal portion of inner liver is narrow.

### 10. CT Scan of the Abdomen and Pelvis

Liver is intensified uniformly and the view of flip-flop is observed. Caudate lobe hypertrophy and liver masses that suggest liver hemangioma are observed which is consistent with Budd Chiari Syndrome.

### 11. Diagnosis Tap

For accurate diagnosis 20 cc ascites as sample was taken and sent to the laboratory for further examination.

Fluid cell count:
WBC: 640 and RBC: 100
Fluid biochemistry:
Glucose: 99, Albumin: 2.5, Amylase: 55.2 and LDH peritoneal: 509
Bacteriologic culture of ascitic fluid is negative.
According to these findings, it was proved that patient has Budd Chiari Syndrome.

**Treatment of complication includes:**

1. Tap: To empty ascetic fluid, Tap frequently was performed on the patient and after 4 months patient's condition is improving slowly.
2. Pharmacotherapy (medicines that were used in hospital)
   - **Cefotaxime:** 1 gr/vial - Antibiotics to prevent the spread of infection – should be injected intravenously every 8 hours.
   - **Pantoprazole:** 40mg – Anti peptic ulcer - one per day for 8 weeks.
   - **Fluconazole:** 100mg - Treatment of esophageal candidiasis – once in a day for 2 weeks.
   - **Co-amoxiclav:** 625mg - antibiotic to prevent the spread of infection – 3 tablets per day.
   - **Prednisolone:** 50mg - weakening the immune system and anti-inflammatory - 2 tablets daily.

**Follow up:**

- **Cyclophosphamide:** 500mg/vial – 2 units per month
- **Prednisolone:** 500mg - weakening the immune system and anti-inflammatory - 2 tablets daily.
- **Warfarin:** 5mg – Anticoagulant – daily 1 tablet with PT and INR control
- **Furosmide:** 40mg - Diuretics, anti-hypertension – daily 1 tablet
- **Spironolactone:** 100mg - Diuretics , treatment of edema, anti-hypertension – daily 1 tablet
- **Calcium-D**: daily 2 tablets

Patient education and preventive measures to avoid disease calenture are very important in the care of SLE patients. Sun screen creams (with high SPF) and protective clothes against UV rays prevent glare reactions and systemic calenture. Also to prevent further SLE complications, appropriate vaccination including administering influenza and pneumococcal vaccines, control of hypertension and obesity are useful.

Low-salt and low-protein diet is recommended for patients with Budd Chiari Syndrome (3).

## 2. Discussion

Budd- Chiari Syndrome is Major hepatic veins obstruction or inferior vena cava (IVC) especially in inside liver and in above liver segments (3). This syndrome may be present acutely, with rapid enlargement of the liver, ascites, and abdominal pain (4).

George Budd in 1845 for the first time described Budd – chiari Syndrome to explain the classic triad of abdominal pain, hepatomegaly and ascites (5). Averbuch and levo in 1986 for the first time reported its association with SLE (6).

Systemic lupus erythematosus (SLE) is a rheumatologic autoimmune disease that damages the tissues of the body through the autoantibodies (1). The disease is clinically along with acute or gradual onset, recrudescence and blackout periods (2). SLE predominantly affects young women in childbearing age but both sexes in all ages are at risk for this disease (1).

SLE is an autoimmune disease in which the body's immune system acts against its own organs and connective tissue and damage them and it is associated with autoantibodies in the blood.

The reaction between the antibody and antigen can cause the inhibition of clotting factors and thrombocytopenia, and on the other hand, it can cause the inhibition of prostacyclin production, release of procoagulant activity, and enhanced thrombosis (7, 8, 9, and 10). That in our patient the development was toward thrombosis.

The causes of SLE can be genetic, immunologic, hormonal and environmental factors.

Clinical symptoms in this disease can be fatigue, Malar rash, arthralgia and arthritis, inflammation, pericarditis and nephritis that in our patient Malar rash, arthritis, fatigue, and nephritis was observed (1).

SLE diagnosis performs clinically, but no clinical or laboratory findings itself is sufficient for the diagnosis. Lots of patients have symptoms that changes over time and just after years SLE diagnosis happens (1). Taking glucocorticoids, Anti-Malar medicines or medicines which weaken the immune system have been suggested for SLE treatment. The goal of treatment is to relieve symptoms, protecting other organs by reducing inflammation and autoimmune activity in patient's body (11).

Budd – chiari Syndrome is classified into two categories that if it presents intravenous lesion such as intravenous thrombosis, it is raised as primary Budd – chiari Syndrome and if it presents venous obstruction due to a foreign object or compressed by the tumor, it is raised as secondary Budd – chiari Syndrome (12) and in our patient it is primary Budd – chiari Syndrome.

The main cause of venous obstruction in Budd – chiari Syndrome is thrombosis. Thrombosis pathogenesis of are unknown but the proposed mechanisms are: direct endothelial cell injury, antigen – antibody mediated platelet activation, and inhibition of endogenous anti-coagulants such as protein C, dysfunction of the coagulant cascade, induced by oral contraceptive use and etc (13, 14, 15, 16).

The acute syndrome presents rapidly progressive severe upper abdominal pain, jaundice, hepatomegaly, ascites, elevated liver enzymes, caudate lobe hypertrophy and eventually encephalopathy. In our patient abdominal pain, ascites and caudate lobe hypertrophy was observed.

Patients clinical presentation is controlled by the extent and swiftness of hepatic outflow obstruction Juxta posed to the body's ability to decompress the liver via development of collateral blood flow (18).

When we suspected about Budd-chiari syndrome, we performed liver enzyme levels measurements and other organ markers (Creatinine, urea, electrolytes, LDH) (17).

Physical examination and laboratory studies are not specific for the disease.

Thus, the results of imaging should be used. Doppler Ultrasonography must be the initial choice because of it has very high sensitivity and specificity to determine the obstruction site and venous flow pattern in hepatic veins or IVC (19).

A system of venous collaterals may form around the occlusion which may be observed in imaging as a spider's web (17).

In our patient according to color Doppler Ultrasonography venous drainage occurs through collaterals to IVC.

Hepatic venography is a reference procedure, but recently it has been known as an invasive technique to measure venous pressure (20).

Minority of patients can be treated by medicines such as sodium restriction, diuretics to control ascites, anticoagulants such as heparin and warfarin and general symptomatic management.For majority of patients we need to do more intervention. Usually patient with Budd – chiari syndrome are treated with surgical shunts to divert blood flow around the obstruction or the liver itself (21).

Another effective treatment for Budd-chiari is Liver transplantation. It is commonly reserved for patients who suffer from fulminant hepatic failure, failure of shunts, or progression of cirrhosis that reduces the life expectancy to 1 year (22).

The range for the Long term survival after transplantation is 69-87%. Up to 10% of patients may have a recurrence of Budd-chiari syndrome after the transplant (17).

Lots of studies were performed attempting to predict the survival of patients with Budd-chiari syndrome. In general, next to 2/3 of patients who had Budd-chiari are survived in 10 years (23).

Survival is also highly dependent on the underlying myeloprolifrative disorder may progress to acute leukemia, independently of with Budd-chiari syndrome (17).

Jungers et al find it out that 20 out of 29 SLE patients have thrombotic episodes. 15 patients had a history of one or more arterial thrombotic episodes. 9 had central nervous system (CNS) involvement, 2 coronary artery thrombosis and 2 visceral infarctions involving the pancreas or the spleen, 7 had one or more episodes of deep vein thrombosis (24). In our patient Venous thrombosis in the IVC was observed.

Recently, an international study, on 1000 patients with SLE has been done that reported increased incidence of malignant disease in these patients than in the general population. The significant point 3 to4 time increases of non-Hodgkin's lymphoma, the amount of other blood cancers, lung and liver - bile is also increasing. Even the risk of malignant diseases in early stages of SLE is more but this is the risk of all periods in this disease. It seems that older age, smoking and taking immunosuppressive medicines are contributing cancer factors for SLE patients. However, the exact mechanism of the malignant states in these patients is not fully known yet (11).

In a study by Koray Bas and his colleagues performed on 3 patients with Budd-chiari syndrome: one of them had encephalopathy, atrophy in the right lobe, left lobe hypertrophy that in his hepatic portal vein thrombosis was seen. Another one had jaundice, abdominal pain and ascites. Laboratory findings about him demonstrated INR and liver function enzymes increases. His thrombus was in the portal vein. Third patient had abundant ascites, hypoalbuminemia and also thrombosis in the portal vein.

In our patient of these findings hypertrophy in caudate lobe, thrombus in the IVC, abdominal pain, ascites, INR increase and hypoalbuminemia were observed. in many studies the association of Budd-chiari syndrome with other autoimmune diseases has been reported (25). That in our patient association of SLE with Budd-chiari syndrome was seen. Association of Budd-Chiari syndrome with other autoimmune diseases have been reported in many studies (26).

## 3. Conclusion

In patients with Budd-chiari syndrome, on time and proper use of medications, Tap care and proper diet have a significant role in improving the condition of patients.

So far there is no definite cure for SLE but treatment goals such as patient education, reducing inflammation; suppressing the immune system and careful clinical follow-up for patients In order to identify the characteristics of the disease as soon as possible is very important and therefore it needs more research (1).

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