

# Successful Thrombolytic Treatment of Acute Budd-Chiari Syndrome: Case Report

## Akut Budd-Chiari Sendromunda Başarılı Trombolitik Tedavi

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**ABSTRACT** We describe a 20-year-old man with paroxysmal nocturnal hemoglobinuria, protein C deficiency and Factor V Leiden mutation (heterozygote) presenting with hepatic failure due to acute Budd-Chiari syndrome. Clinical findings and laboratory tests showed hepatic failure due to acute Budd-Chiari syndrome. The patient was successfully treated with urgent administration of tissue plasminogen activator, followed by continuous heparin and then by warfarin therapy. We emphasize that early diagnosis and effective thrombolytic treatment in such cases may be life-saving.

**Key Words:** Budd-Chiari syndrome; hemoglobinuria, paroxysmal; thrombolytic therapy

**ÖZET** Biz bu olgu sunumunda, paroksizmal nokturnal hemoglobinüri, protein C eksikliği ve faktor V Leiden mutasyonuna bağlı karaciğer yetersizliği ile başvuran akut Budd-Chiari sendromlu 20 yaşında bir erkek hastayı sunmaktayız. Hastanın klinik ve laboratuvar bulguları akut Budd-Chiari sendromuna bağlı karaciğer yetersizliği ile uyumluydu. Hastaya acil olarak doku plazminojen aktivatörü ve sonrasında heparin uygulandı, idame olarak warfarin tedavisi verildi. Bu gibi olgularda erken tanı ve etkili trombolitik tedavinin önemini vurgulamaktayız.

**Anahtar Kelimeler:** Budd-Chiari sendromu; hemoglobinüri, paroksizmal; trombolitik tedavi

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**B**udd-Chiari syndrome (BCS) is a rare syndrome resulting from obstruction of the hepatic vein or inferior vena cava and presenting with painful hepatomegaly and ascites.<sup>1</sup> Clinical presentation varies, depending on the extent and rapidity of the hepatic vein obstruction. BCS can be classified as fulminant, acute, subacute, or chronic. The most common causes of BCS are myeloproliferative diseases, especially polycythemia vera (PV), paroxysmal nocturnal hemoglobinuria, and other hypercoagulable states such as protein C and S deficiency and Factor V Leiden. The prognosis of acute BCS is poor, but with early diagnosis and effective treatment the clinical outcome may still be good. This case concerns a patient with paroxysmal nocturnal hemoglobinuria, protein C deficiency and Factor V Leiden mutation (heterozygote) presenting as an acute form of BCS, and successful treatment with thrombolytic and anticoagulant therapy.

## CASE REPORT

A 20-year old male presented to our emergency department with a 3-day history of progressive abdominal pain and distension. He had no past medical or family history of note. On examination he was confused. He had ascites with tender hepatomegaly of 20 cm. Blood tests revealed hepatic failure (Table 1). Several prothrombotic markers were evaluated (Table 2). Doppler ultrasonography confirmed hepatomegaly and ascites and no flow could be determined in the hepatic veins. This was confirmed using spiral tomography (Figure 1). The patient was diagnosed with acute (fulminant) BCS and transferred to the intensive care unit. We carried out numerous investigations into the etiology of acute BCS. In the light of clinical and laboratory data, the patient was diagnosed as acute BCS secondary to paroxysmal nocturnal hemoglobinuria, protein C deficiency and Factor V Leiden mutation (heterozygote). Agitation Systemic thrombolytic therapy was instituted (tissue plasminogen activator, 100 mg) followed by continuous infusion of unfractionated heparin. Over

**TABLE 2:** The patient's prothrombotic markers.

	Patient	Normal values
Homocystinuria	Negative	Negative
Serum homocysteine level	Normal	0-12 mg/dL
MTHFR	Negative	Negative
Prothrombin 20210 (-)	Negative	Negative
Antithrombin III	40.5	22-39 mg/dL
Protein C:	10%	72-160%
Protein S:	98%	60-150%
Anticardiolipin IgM	Negative	Negative
Anticardiolipin IgG	Negative	Negative

**TABLE 1:** The patient's 1<sup>st</sup>, 3<sup>rd</sup> and 18<sup>th</sup> day biochemical parameters.

	1 <sup>st</sup> day	3 <sup>rd</sup> day	18 <sup>th</sup> day
Hb (g/dL)	11.1	10	11.3
Htc (%)	33.5	30.3	34.2
Wbc (/μL)	28.400	16.700	7600
Plt (/μL)	195.000	204.000	496.000
Bun (mg/dL)	15	7	13
Cr (mg/dL)	1.9	1.0	0.8
AST (U/L)	49	311	66
ALT (U/L)	36	475	76
ALP(U/L)	63	241	169
Gamma glutamyl transferase(U/L)	37	80	158
Total bilirubin (mg/dL)	2.1	0.9	0.6
Direct bilirubin (mg/dL)	1.2	0.6	0.2
Total protein (g/dL)	5.5	5	10.3
Albumin (g/dL)	2.6	2.1	4.6
CRP	30.7	26.6	1.36
Prothrombin time (sec)	26.4	24.5	32.1
Active partial thromboplastin time (sec)	32.8	29.8	36
INR	2.48	2.26	3.0
Sedimentation (mm/h)	40		30



FIGURE 1: The patient's spiral tomography on admission.

the following 2 weeks there was a rapid improvement in both hepatomegaly and liver functions.

On the 12<sup>th</sup> day of admission, abdominal spiral tomography showed that hepatomegaly was 16 cm, that there was no ascites and that the hepatic veins were patent (Figure 2). The patient was successfully discharged and is now receiving warfarin therapy. Written informed consent was obtained from the patient.

## DISCUSSION

The most common causes of BCS include both hereditary and acquired hypercoagulable states and myeloproliferative disorders. Other causes of the syndrome include paroxysmal nocturnal hemoglobinuria, antiphospholipid syndrome and inherited



**FIGURE 2:** The patient's spiral tomography after fibrinolytic therapy.

deficiencies of protein C, protein S, and antithrombin III, Factor V Leiden mutation, prothrombin-gene mutation and methylenetetrahydrofolate reductase mutation.<sup>2,3</sup>

BCS may be seen in pregnant women and in those using oral contraceptive drugs. Rarer causes of BCS are renal, adrenal and liver cancers invading the inferior vena cava.<sup>4</sup>

Clinical presentation may vary due to occlusion time and the degree of obstruction in the hepatic veins. If occlusion is total and rapid, as in our case, the patient may present with hepatic failure.

Diagnosis should be confirmed as early as possible with the help of a team-based approach, with the participation of a hepatologist, a hematologist, a radiologist and a surgeon.<sup>4</sup> Clinicians should not waste time on unnecessary invasive procedures. Clinical findings and Doppler ultrasonography are usually enough to establish a diagnosis. If BCS is diagnosed early enough, as in our case, fibrinolytic treatment may be life-saving. There are numerous cases of thrombolytic therapy in BCS.<sup>5-7</sup> Guerin et al suggested early thrombolysis as an alternative to surgery in acute BCS. For encouraging results, it was suggested that treatment should consist of early intensive thrombolysis for up to 1 week, followed, without interruption, by APTT controlled heparin infusion.<sup>8</sup> In the absence of controlled clinical trials, we think that in selected cases, especially in fulminant and acute forms of BCS, thrombolytic treatment as an initial treatment or after a primary radiological intervention such as TIPS, will represent the cornerstone of treatment in the future.

Otherwise, without definitive therapy most patients with fulminant Budd-Chiari syndrome will die of liver failure or complications thereof.<sup>9</sup> We emphasize that early diagnosis and effective thrombolytic treatment in such cases may be life-saving.

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