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Case Report: Budd–Chiari Syndrome and Esophageal Variceal Bleeding Due to Alveolar Echinococcosis

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SUMMARY: Alveolar echinococcosis of the liver is a rare larval cestode disease which is due to the intrahepatic growth of the tapeworm *Echinococcus multilocularis*. This cestode naturally evolves as a larval stage within cysts in the body of carnivores. Humans are accidental intermediate hosts and become infected, either by eating food contaminated with carnivore-originated eggs or by touching foxes. It behaves as malignant liver tumour and rarely causes Budd-Chiari syndrome and variceal bleeding. Budd–Chiari syndrome is a hepatic venous outflow tract obstruction and may be present abdominal pain, hepatomegaly and ascites. Parasitic cysts may cause compression and thrombosis of the hepatic venous outflow tract. It may present as portal hypertension and variceal upper gastrointestinal bleeding. We here in report a 47-year-old woman without a prior history of liver disease presented with Budd–Chiari syndrome and variceal bleeding due to Alveolar echinococcosis. The course of this rare disease is demonstrated by means of the most important laboratory, serologic and radiologic parameters.

Key Words: Alveolar echinococcosis, Budd–Chiari syndrome, variceal bleeding.

Olgu Sunumu: Alveoler Ekinokoka Bağlı Budd-Chiari Sendromu ve Özofagus Varis Kanaması

ÖZET: Karaciğerin alveoler ekinokoku *Echinococcus multilocularis*'e bağlı nadir bir sestod hastalığıdır. Bu sestod, larval dönemini etobur hayvanlarda kistler içinde tamamlar. İnsanlar rastlantısal ara konaklar olup vahşi etoburların yumurtaları ile bulaşmış yiyecekler aracılığıyla veya tilkilere dokunmakla hastalığı edinirler. Hastalık malign karaciğer tümörleri gibi seyir gösterir ve çok nadiren de Budd- Chiari sendromu ve özofagus varis kanamasına neden olur. Budd–Chiari sendromu hepatik venlerin tıkanması ve karın ağrısı, hepatomegali ve asitle ortaya çıkan bir hastalıktır. Paraziter kistler hepatik venöz sisteme dıştan bası yolu ile veya tromboza neden olarak bu hastalığa neden olurlar. Bazen de portal hipertansiyon ve özofagus varis kanamasına neden olabilir. Bizler; daha önceden bilinen bir karaciğer hastalığı olmayan 47 yaşındaki bir kadın hastada Alveoler ekinokok hastalığına bağlı gelişen bir Budd–Chiari sendromu ve varis kanaması olgusunu sunuyoruz. Hastalığın seyri önemli laboratuar, serolojik ve radyolojik ölçütlerle gösterilmiştir.

Anahtar Sözcükler: Alveoler ekinokok, Budd–Chiari sendromu, varis kanaması.

INTRODUCTION

Budd–Chiari syndrome (BCS) is a hepatic venous outflow tract obstruction, whatever the level or the mechanism of obstruction (7). BCS can be defined as two groups; primary hepatic vein thrombosis (classical Budd-Chiari) and obliteration of hepatic portion of the inferior vena cava (IVC) and hepatic vein orifices (obliterative disease). In the Far East, the latter is more common than the former (12). The etiology of Budd-Chiari syndrome are listed in table 1.

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It leads to hepatomegaly, upper abdominal pain and high-albumine gradient ascites (15).

Alveolar echinococcosis is caused by the larval stage of the rodental cestode (*Echinococcus multilocularis*) and is frequently detected as a cystic lesion in the liver. It resembles that of a malignant tumor of liver (8).

E multilocularis is seen mostly in the arctic and subartic regions in the world and mainly within wildlife cycles. Therefore, east part of Turkey where the fox population remains high, is an endemic area for *alveolar echinococcosis*. Human infection with the larval stage, *alveolar echinococcosis*, has a higher mortality rate than cystic echinococcosis and it resembles malignant lesions of the liver (3).

Compression by space-occupying lesions (tumor, abcess or inflammation) may cause to secondary BCS. Parasitic cysts

may cause externally compression or invasion of the venous outflow of the liver. So, there is a well-defined but a rare association between BCS and *Alveolar echinococcosis* (AE) (2).

In this case report, we describe a female patient with BCS who had AE, and was suffering from a variceal gastrointestinal bleeding.

Table 1. Causes of the Budd–Chiari Syndrome

Myeloproliferative disorders (account for 50% cases) (Polycythemia vera, essential thrombocythemia, occult myeloproliferative disorders)
Hypercoagulable states (Factor V Leiden, prothrombin gene mutation G20210A, antiphospholipid antibody syndrome, antithrombin III deficiency, protein C deficiency, protein S deficiency, paroxysmal nocturnal hemoglobinuria,oral contraceptives,pregnancy)
Liver Infections (Amebic or pyogenic liver abcess, hydatid cysts, filariasis, schistosomiasis, tuberculosis) and neoplasms
Membranous webs of inferior vena cava (congenital or acquired)
Systemic diseases (Behcet's disease, inflammatory bowel disease, celiac sprue, dacarbazine therapy, polycystic liver disease)
Oral contraceptive pills or pregnancy

CASE

A 47-year-old woman was admitted to the hospital because of a hematemesis, a constant upper abdominal pain and abdominal dullness. Two days before admission, right upper quadrant pain developed and did not cure with analgesics.

The patient was a Eastern Anatolian, where she had resided in rural area and she was a farmer. She did not use alcohol, tobacco, or illicit drugs, and she had never traveled outside of her region. There was no medical history of thrombosis. All of her family members were healthy.

The temperature was 37.4°C, the pulse was 106, and the respirations were 20. The blood pressure was 100/60 mm Hg. and there was a orthostatic hypotension. Physical examination on admisson revealed pale sclera, an enlarged, soft and tender hepatomegaly with tense ascites. The spleen was palpable.

Endoscopic examination of upper gastrointestinal system revealed grade III esophageal varices with bleeding. An endoscopic variceal bant-ligation (EVL) performed and she received octreotide and ceftriaxon.

Abdominal paracentesis was performed, and the serum–ascites albumin gradient was reported to be 1.4 g/dl. Therefore, the patient assumed to have portal hypertension.

Further analysis of ascitic fluid revealed portal hypertensive ascites with total protein 3.7 g/dl, WBC 600/mm3, neutrophil 100/mm3, CA- 125 500 IU/L. Remainder of the laboratory parameters are listed in table 2.

Table 2. Laboratory Values on Admission

Variable	Value
Hematocrit (%)	21,7
White Blood Cells (per mm/3)	9900
Differential count (%)	
Neutrophils	75.3
Lymphocytes	18.4
Monocytes	5.7
Eosinophils	0.3
Basophils	0.3
Platelet count (per mm/3)	213000
Glucose (mg/dl)	108
Aspartate transaminase (IU/L)	19
Alanine aminotransferase (IU/L)	29
Alkaline phosphatase (IU/L)	520
γ-glutamyl transpeptidase (IU/L)	181
Albumin (g/dl)	3.6
Globulin (g/dl)	3.3
Prothrombin time (seconds)	17,9
Total immunglobulin E level (u/L)	7770
Hepatit B and C	Negative
Autoimmune liver panel	Negative

On ultrasonography and computed tomography examinations, both of the liver and its caudate lobe were enlarged and the hepatic veins were not recognized, which suggested BCS (Figure 1 and 2). There was also a solid component with multiple small cysts with a very high sinyal intensity scattered throughout liver. Furthermore, doppler ultrasonography failed to demonstrate hepatic veins. Indirect hemagglutination test for AE was positive.

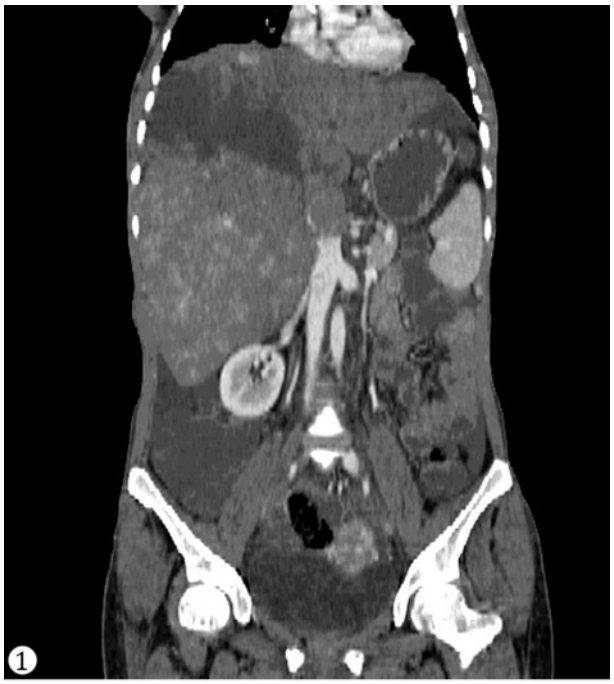
Albendazole (20 mg/kg/d) was given in a treatment cycle of 3 weeks followed by one week drug-free intervals. Additionaly, a beta blocker (propranolol) and a diuretic (aldactone) were started at a dose of 80 mg/day and 200 mg/day respectively.

Until now (6 months later), no recurrent bleeding has been recognized and her ascites moderately improved.

DISCUSSION

There are several underlying diseases and conditions for BCS (Table). Obstruction, invasion or external compression of hepatic vein may cause BCS (11). In our case, all of the diseases listed above were ruled out by laboratory, serologic and radiologic examinations.

BCS may cause portal hypertension, ascites, and bleeding esophageal varices (16). As seen above, she had grade III bleeding esophageal varices and treated with EVL.



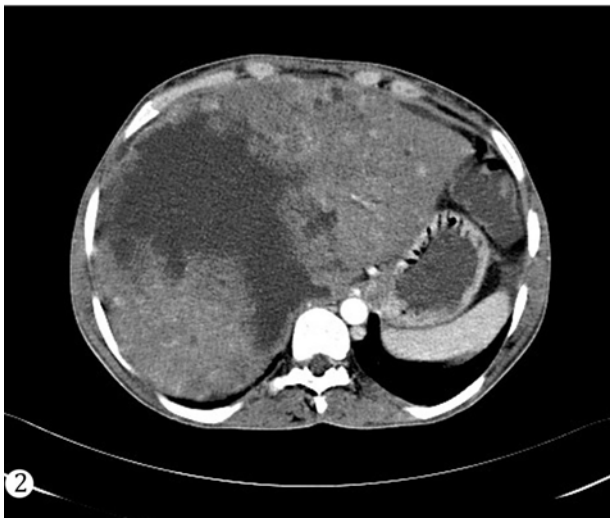


Figure 1 and 2: CT image shows an isointense solid component with multiple small cysts.

An international prospective study from Europe showed that pure hepatic obstruction in 50%, TVC obstruction in 2% and combinations in 47%. Concomitant portal vein obstruction was present in 15% (5).

In our case, classical triade of BCS include fever, abdominal pain, and high albumin gradient ascites recognized at presentation. Furthermore, her bleeding esophageal varices secondary to portal hypertansion treated with EVL and ocreotide. So, analysis of her ascites revealed a high protein content (>3 mg/dl) and high serum-ascites albumin gradient (>1.1 mg/dl). CA-125 level and lymphocyt count of ascites were also higher. With CT examination of liver, failure to visualize the hepatic veins was also compatible for BCS. All of these findings were consistent with BCS in this case.

Elevated eosinophilia and a high level production of IgE are features of patients with parasitic diseases, particularly echinococcosis (6). At presentation, a higher immunoglobuline E (Ig E) level and eosinophilia were also striking findings.

A few parasitic liver diseases such as hydatid cysts, alveolar echinococcosis may cause to thrombosis of hepatic veins by external compression or by vascular invasion but these are extremely rare conditions.

A strong association between BCS and AE has been defined but it has been reported as solitary case reports (2, 9, 13).

The natural life cycle of *Echinococcus multilocularis* has been well described. *E. multilocularis* cestodes are up to 4 mm long with two to six segments. The adult cestode involves the small intestine of a definite host which are mainly foxes and rarely domestic animals. Intermediate hosts for AE are canid rodents. Humans and other incidentally hosts have not a biologic role in the life cycle of tapeworm (1).

The tapeworm causes devastating effects in the human body. The liver is the target organ of the cestode (4).

The most common radiologic findings of the liver in patients with AE are round cysts with/without a solid component (Type1 and 2), a solid component surroundly large and/or irreguler cysts with multiple small round cysts (Type 3), a solid component without cysts (Type 4) and a large cyst without solid component (Type 5) (10). In our case, hepatic BT findings were compatible with type 3 lesion.

Enzym Lynked Immunosorbent Assay (ELISA), Indirect Hemagglutination Test (IHA) and Indirect Fluorescent Antibody Test (IFAT) are the most useful serologic tests for diagnosis of AE (14). In this case; the serologic diagnosis was done by IHA.

At this time, no curative treatment is available. Partially surgical resection of the liver can be indicated only at a very early stage of the disease. Chemotheraphy with albendazole helps to control disease progression but it is not a curative treatment (8).

In conclusion, *alveolar echinococcosis* in the liver may rarely cause BCS and variceal bleeding and it is an unusual complication. AE should be remembered especially in the setting of Budd-Chiari syndrome, eosinophilia and cystic liver masses.

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