A Recovery Case of Acute-Onset Autoimmune Hepatitis Presenting as Fulminant Hepatic Failure, Who Received Living Donor-Liver Transplantion

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Abstract

A 23-year-old woman was admitted to our hospital with jaundice and hepatic coma. She had taken a weight-loss supplement for one month before admission. Her clinical and laboratory findings were consistent with fulminant hepatic failure and fulfilled the criteria of autoimmune hepatitis. Despite corticosteroid pulse therapy and plasma exchange, her symptoms and laboratory findings deteriorated. Her condition improved after she received a living donor-liver transplant from her sister. Autoimmune hepatitis usually follows a chronic course, but it should be considered a type of fulminant hepatic failure and treated promptly.

Key words: plasma exchange, weight-loss supplement, liver transplantation

(DOI: 10.2169/internalmedicine.45.1799)

Introduction

Autoimmune hepatitis (AIH) is a chronic necroinflammatory liver disease characterized histologically by a heavy infiltrate of lymphocytes and plasma cells in the portal tract and serologically by high titers of antinuclear antibodies (ANA) and globulin levels. Most patients with AIH exhibit clinical features of chronic hepatitis, but some have acute or fulminant presentation. Although corticosteroid therapy is effective in patients with AIH, some do not respond to the therapy (1, 2). Here, we describe a patient with acute-onset AIH presenting as fulminant hepatic failure who eventually underwent living donor liver transplantation.

Case Report

A 23-year-old woman took a weight-loss supplement for one month in August 2004. On September 27, she felt general malaise, and jaundice appeared on October 3. After five days, she was admitted to a hospital because of the above symptoms and liver dysfunction. She was not a regular alcoholic drinker and her family had no history of hepatic disease. Laboratory findings on admission were as follows: aspartate aminotransferase (AST), 448 IU/l (normal range, 10-35); alanine aminotransferase (ALT), 315 (normal, 12-33); alkaline phosphatase (ALP), 602 (normal, 300-500); total bilirubin (TB), 11.67 mg/dl (normal range <1.1); direct bilirubin (DB), 6.5 (normal range, 0.2-0.4). HBs antigen, IgM-HA antibody and HCV antibody were all negative. Abdominal ultrasonography showed no abnormal findings. She had a diagnosis of acute hepatitis due to unknown origin. Despite intravenous administration of stronger neo-minophagen C (60 ml/day), lethargy and jaundice developed with a serum TB level of 18 mg/dl. Therefore, she was referred to our hospital on October 26. On admission, she was drowsy and stage II on the systems for grading hepatic encephalopathy. Her blood pressure was 156/89 mmHg and heart rate 102 /min. Her body temperature was 36.9°C. The conjunctivas were jaundiced, and heart and respiratory
sounds were normal. The liver and spleen were not palpable. Laboratory findings were as follows: white blood cell count, 9,900/μl; AST, 104 IU/l; ALT, 66 IU/l; lactate dehydrogenase, 242 IU/l (normal range, 119-229); TB, 20.5 mg/dl; DB, 12.0 mg/dl; ALP, 532 IU/l; $\gamma$-glutamyl transpeptidase ($\gamma$ GTP), 26 (normal, 10-47); total protein, 5.6 g/dl (normal, 6.0-8.5); albumin, 2.9 g/dl (normal, 4.0-5.3); serum immunoglobulin G (IgG), 2,348 mg/dl; IgA, 277 mg/dl; IgM, 130 mg/dl; prothrombin time (PT), 15.5%. Anti-nuclear antibodies (ANA) were positive at a titer of 1:1,280, with a speckled pattern. Anti-smooth muscle antibody was negative. Abdominal ultrasound and computed tomography showed an atrophic liver and ascites (Fig. 1). These findings were consistent with fulminant hepatic failure. Plasma exchange (PE) and continuous hemodiafiltration (CHDF) were started immediately. Additionally, methylprednisolone and prostaglandin were administered. The following day, despite intensive treatment, her encephalopathy progressed and laboratory findings deteriorated. Therefore, she received a living-donor liver transplant from her sister. The explanted liver was shrunken and noncirrhotic with massive hepatocellular collapse. Microscopic examination of an explanted liver specimen showed massive necrosis and interface hepatitis (Fig. 2). Her encephalopathy and laboratory findings improved after the transplantation.

### Discussion

In Japan, 46.9% of the cases of fulminant hepatic failure is caused by hepatitis virus and 9.5% by drugs (3). In addition to halothane and isoniazid, which are well known to cause fulminant hepatic failure, weight-loss supplements and health foods are attracting attention. According to an investigation by the Japanese Hepatology Society, there were 1,016 cases of drug-induced liver injury across the country in 2002, and 55 of them (5.4%) were due to weight-loss supplements. The Society’s second national survey of cases of drug-induced liver injury revealed that 25.7% were cases of dangerous liver damage, such as severe hepatitis or fulminant hepatic failure, due to weight-loss supplements and health foods (4). In this case, the result of a lymphocyte-stimulating test for weight-loss supplements was negative. In addition, according to the criteria of drug-induced liver injuries (5), our patient’s score was 2, indicating a low possibility that this case was a drug-induced liver injury.

The pathological feature of AIH is chronic hepatitis with marked interface hepatitis and plasma cell infiltration. However, interface hepatitis is not disease specific and may be shown by patients with drug-related, viral, and other immune-mediated forms of acute and chronic hepatitis. Therefore, it is difficult to determine the cause of fulminant hepatic failure only by pathological findings. Because this case fulfilled the criteria for AIH, we finally diagnosed it as fulminant hepatic failure due to AIH. However, the possibility of drug-induced AIH was not ruled out, because some drugs are reported to trigger AIH (6, 7).

The mode of presentation of AIH is variable, and an acute onset or fulminant presentation of AIH has long been recognized (8-11). A Japanese nationwide survey shows that AIH comprises 9.2% of the causes of fulminant hepatic failure.
(3). AIH type 2 was previously believed to present as fulminant hepatic failure more frequently than AIH type 1 (12-14). However, Herzog et al reported fulminant hepatic failure in pubertal patients with AIH type 1 and suspected the influence of estrogen on the severity of AIH (15). Because this case is AIH type 1, it is interesting from the standpoint of understanding the mechanism of AIH presenting as fulminant hepatic failure.

A large amount of prednisolone or PE is needed for the treatment of AIH presenting as fulminant hepatic failure (1), and when the patient is elderly or treatment is delayed, the prognosis is poor if the patient is treated only medically. Liver transplantation is an option for patients with fulminant hepatic failure, but the optimal timing of transplantation is difficult to determine. In this patient, living donor liver transplantation was performed on day 2 after admission. We think that this decision was proper because the explanted liver specimen showed massive necrosis, and her encephalopathy and laboratory findings improved after the transplantation. In Japan, the use of cadaveric liver transplantation is limited due to a lack of cadaveric donors. As a result, living donor liver transplantation has been developed. The most commonly used criteria is the National Guideline proposed by the Japanese Acute Hepatic Failure Study Group (Table 1) (16). Our patient fulfilled the Japanese criteria. AIH presenting as acute or fulminant hepatic failure needs early diagnosis and prompt treatment including liver transplantation.

**Figure 3.** Clinical course. SNMC: stronger neo-minophagen C. CHDF: continuous hemodiafiltration.

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**References**


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