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*Case Report*

# A case of de novo autoimmune hepatitis

Shuang-Nan Zhou[1*], Ning Zhang[2*], Hai-Bin Su[1], Zhen-Wen Liu[1], Min Zhang[1]

*[1]Liver Transplantation Research Center, 302 Hospital of PLA, Beijing, China; [2]Liver Center of Integrative Medicine, 302 Hospital of PLA, Beijing, China. [*]Equal contributors.*

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**Abstract:** In this study, we reported a case of de novo autoimmune hepatitis. In this case, liver puncture biopsy was carried out and the result showed autoimmune hepatitis. In this report, we described the characteristics of this patient.

**Keywords:** Autoimmune hepatitis, liver transplantation

## Introduction

In the liver transplantation recipients of our hospital, there is one case of hepatitis C patient with de novo autoimmune hepatitis (AIH), who was treated with plasmapheresis twice to rapidly remove the pathogenic factors in the plasma; then immunosuppressants were used and a satisfactory effect was obtained. It was reported as follows.

## Clinical data

The patient was male, aged 55, receiving liver transplantation due to hepatitis C cirrhosis (in decompensated) in October 2009; tacrolimus and mycophenolate were used to prevent rejection reaction and liver function was normal; HCV RNA was negative a month after operation. In April 2010, serum albumin of the recipient was 30 g/L; alanine aminotransferase (ALT) was 374 U/L; aspartate aminotransferase (AST) was 164 U/L; HCV RNA was $6.04 \times 10^7$ IU/L and HCV RNA genotype was 1b. Liver puncture histopathology results suggested HCV infection recurrence, and the severity was equivalent to G3S1, without significant rejection. He was diagnosed with hepatitis C recurrence after liver transplantation. He was treated with pegylated interferon α-2a injection (135 μg/week) plus ribavirin (600 mg/d) for anti-viral treatment; the review of HCV RNA was performed two months later and the result was negative. Liver function was reviewed intermittently and ALT fluctuated between 60~70 U/L. In October 2010, the review of liver function showed that serum albumin was 27 g/L; ALT was 74 U/L; AST was 71 U/L; CHE was 4404 U/L; IgG was 43.7 g/L and HCV RNA was negative. Liver biopsy was performed again and the results suggested autoimmune hepatitis and HCV infection recurrence; the severity was equivalent to G3S2, without significant rejection. Pegylated interferon and ribavirin were deactivated and immunosuppressants dose was adjusted; tacrolimus dosage was adjusted from 1.5 mg/d to 2 mg/d; mycophenolate mofetil (0.5 g/d) was replaced with mycophenolate sodium (1080 mg/d). January 2011, no improvement was achieved in liver function, with serum albumin of 22 g/L, ALT of 263 U/L, AST of 199 U/L, alkaline phosphatase (ALP) of 109 U/L, γ-glutamyl acyl transferase (γ-GT) of 217 U/L and IgG of 92.2 g/L, without significant rejection. According to AIH descriptive diagnostic scoring system proposed in 1993 and revised in 1999 by International Autoimmune Hepatitis Group [1], the score of this case was 16 points; based on the simplified diagnostic scoring system of AIH proposed in 2008 [2], the score of this case was 6 points; combined with the results of the two scoring systems, it was diagnosed as autoimmune hepatitis.

From January 2011, plasmapheresis was performed twice and azathioprine (50 mg/d) combined with prednisone (30 mg/d for one week; 20 mg/d for one week; 15 mg/d for two weeks;

10 mg/d for maintaining) was used from the second month. Then liver function was gradually improved and IgG declined; in April 2011, liver function review showed that serum albumin was 31 g/L; ALT was 83 U/L; AST was 48 U/L; ALP was 82 U/L; γ-GT was 213 U/L; IgG was 41.4 g/L and HCV RNA was negative. Liver function review in December 2011 showed: serum albumin was 41 g/L; ALT was 57 U/L; AST was 44 U/L; ALP was 52 U/L; γ-GT was 49 U/L; IgG was 16.6 g/L; HCV RNA was negative. Regular follow-up showed that the recipient was generally in good condition, with normal liver function and negative HCV RNA.

## Discussion

For advanced liver patients who were caused by HCV infection, the Recurrence of Hepatitis C after liver transplantation was the main reason leading to graft dysfunction and affecting the postoperative quality of life. Once the hepatitis C recurred after surgery, progression of liver injury was significantly faster than that of non-transplant patients. The incidence of cirrhosis within 5 years was 30% [3]. Effective antiviral therapy can prevent or delay progression of disease [4]. In this case, the patient was treated with targeted antiviral therapy. Good results, early virologic response and sustained virologic response were achieved.

In this case, liver puncture biopsy was carried out and the result showed autoimmune hepatitis. Such a situation may be induced by the following possibilities. (1) Hepatitis C combined with autoimmune phenomena: studies have shown that, compared with other hepatitis virus infection, HCV infection was more likely to merge autoimmune disorders. Autoimmune phenomena were common [5, 6]. In this case, the HCV RNA was always negative after antiviral therapy; therefore we can exclude this situation. (2) Rejection after transplantation: interferon indeed induces the risk of rejection [7]. Some scholars believe that part of autoimmune hepatitis may be another manifestation of rejection [8, 9]. In this case, there was no significant improvement in liver function after adjusting the immunosuppressant, which was not support rejection diagnosis. (3) The new autoimmune hepatitis: recent years in clinical, the new autoimmune hepatitis after transplantation were paid more attention. Its features included hyperimmunoglobulinemia, a variety of autoantibodies, and interface inflammation on histology and lymphoplasmacytic infiltration. Especially it was invalid in conventional anti-rejection treatment while it was effective in standard regimen of autoimmune hepatitis (corticosteroids and azathioprine) [8]. Etiology of this case may be related to drug. It was reported that interferon drug can induce autoimmune hepatitis, but its mechanism was not entirely clear. It may correlate with formation of drug-protein complexes, the activation of immune cell receptor as well as the body's genetic predisposition [10, 11]. In this case, the HCV RNA kept negative. Immunosuppressants adjustment was invalid; excluding that hepatitis C was associated with autoimmune disease and the possibility of rejection. At the same time, combined with histological features and characteristics of significant higher IgG, new-onset autoimmune hepatitis was confirmed.

Currently, the diagnosis and treatment of de novo AIH mostly refer the treatment program of non-transplant AIH diagnosis uses the AIH descriptive diagnostic scoring system proposed in 1993 and revised in 1999 by IAIHG [1] and the simplified diagnostic scoring system of AIH proposed in 2008 [2]. AIH treatment uses corticosteroids alone or in combination with azathioprine; in order to reduce the dosage and toxicity of corticosteroids, combination therapy is advocated in clinical currently [12]. As an important part of blood purification technology, plasmapheresis has been more widely used in a variety of autoimmune diseases with poor conventional treatment in clinical. The main mechanism of plasmapheresis for the treatment of autoimmune diseases is to clear abnormal ingredients in the plasma of patients with autoimmune diseases, including antigen-antibody immune complexes, inflammatory cytokines released by lymphocyte and other harmful factors [13, 14]. In the early fluctuation period of liver function, liver biopsy was actively performed in this case, providing an important basis for the final diagnosis; there was no significant improvement in liver function after pre-adjusted immunosuppressive therapy, further excluding the possibility of rejection; ultimately the patient was diagnosed with autoimmune hepatitis. Under the premise of standardized diagnosis, combined with 2010 AASLD guidelines, we accurately grasped the indications for immunosuppressive therapy [15] and firstly

preformed twice plasmapheresis to rapidly clear pathogenic factors in the plasma, and then used the immunosuppressive agents to achieve sustained remission of disease; the outcomes were satisfactory.

From this case, we can conclude when abnormal liver function was found in hepatitis C patients who were treated after liver transplantation, multiple factors should be considered, including the relatively rare new autoimmune hepatitis. Much attention should be paid to liver histopathology diagnostic process, noting hyperimmunoglobulinemia. Standardized diagnosis and treatment should be based on the guidelines.

## Disclosure of conflict of interest

None.

**Address correspondence to:** Drs. Zhen-Wen Liu and Min Zhang, Liver Transplantation Research Center, 302 Hospital of PLA, Beijing, China. E-mail: liuzhenwen@medmail.com.cn (ZWL); 13911517721@163.com (MZ)

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