



Figure 2. Clinical course of the patient.

HBV and HCV related glomerulonephritis is still unclear and requires further study.

Regarding treatment of HCV related glomerulonephritis, a combined therapy with interferon- α and ribavirin has become the standard treatment [6]. Once this combination therapy was started in our case, proteinuria and viremia were further decreased. Proteinuria dropped to a minimum level of 200mg per day 8 weeks after starting this therapy. HCV RNA titers were also significantly reduced. Owing to hemolytic anemia, ribavirin was stopped for a little while. Karmar et al. recommend to treat HCV related glomerulonephritis patients for at least 48 weeks and to continue the anti-viral therapy even in the absence of a decrease in HCV RNA concentration of 2 log at week 12 [7].

This is why we are now still continuing anti-viral therapy.

The present case demonstrated a patient with MPGN associated with simultaneous HBV and HCV infection. She achieved clinical remission under a full spectrum of drugs. We conclude that MPGN can be associated with simultaneous HBV and HCV infection and responds well to therapy with interferon- α and ribavirin.

References

- [1] Johnson RJ, Willson R, Yamabe H, Couser W, Alpers CE, Wener MH et al. Renal manifestations of hepatitis C virus infection. *Kidney Int.* 1994; 46: 1255-1263.
- [2] Johnson RJ, Gretch DR, Couser WG, Alpers CE, Wilson J, Chung M et al. Hepatitis C virus-associated glomerulonephritis. Effect of alpha-interferon therapy. *Kidney Int.* 1994; 46: 1700-1704.
- [3] Johnson RJ, Gretch DR, Yamabe H, Hart J, Bacchi CE, Hartwell P et al. Membranoproliferative glomerulonephritis associated with hepatitis C virus infection. *N Engl J Med.* 1993; 328: 465-470.
- [4] Johnson RJ, Couser WG. Hepatitis B infection and renal disease: clinical, immunopathogenetic and therapeutic considerations. *Kidney Int.* 1990; 37: 663-676.
- [5] Chung DR, Yang WS, Kim SB, Yu E, Chung YH, Lee Y et al. Treatment of hepatitis B virus associated glomerulonephritis with recombinant human alpha interferon. *Am J Nephrol.* 1997; 17: 112-117.
- [6] Alric L, Plaisier E, Thebaud S, Peron JM, Rostaing L, Pourrat J et al. Influence of antiviral therapy in hepatitis C virus-associated cryoglobulinemic MPGN. *Am J Kidney Dis.* 2004; 43: 617-23.
- [7] Kamar N, Boulestin A, Selves J, Esposito L, Sandres-Saune K, Stebenet M et al. Factors accelerating liver fibrosis progression in renal transplant patients receiving ribavirin monotherapy for chronic hepatitis C. *J Med Virol.* 2005; 76: 61-68.

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