Therapy of acute hepatitis C with interferon-α2b plus ribavirin in a health care worker

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Abstract

Hepatitis C virus can be transmitted to health care workers through needlestick accidents. In this report, the result of short-term therapy with interferon-α2b plus ribavirin combination of acute hepatitis C in a health care worker who infected through laboratory accident was presented. The patient received combination of interferon-α2b (5 MU three times a week) plus ribavirin (1000 mg daily) for three months. Aminotransferase levels were normalised and clearance of HCV RNA was obtained in the first month of the therapy. After 19 months of follow-up, he had undetectable levels of HCV RNA so sustained response (clearance of HCV RNA and normalisation of aminotransferases at least six months after cessation of therapy) was achieved. According to this result, short-term therapy of acute hepatitis C with interferon-α2b plus ribavirin may be an alternate to others. (Acta gastroenterol. belg., **2005**, 68, **104-106**).

Key words : acute hepatitis C, interferon therapy, ribavirin.

Introduction

Health care workers are at risk for occupational transmission of hepatitis C virus (HCV) through needlestick and laboratory accidents. The rate of occurrence of acute infection due to HCV among health care workers by these accidents are estimated to be < 5% (1). Currently neither neutralizing antibody nor a vaccine has been developed (2). HCV infection could not be prevented by the commercially available immunoglobulin preparations given immediately after an accident (3). Complete recovery from acute hepatitis C, which is defined by sustained clearance of ribonucleic acid of HCV (HCV RNA) and normalisation of the transaminase level, seems to occur spontaneously in 30% to 50% of cases of nontransfusion-associated acute hepatitis (1). On the other hand 50% to 85% of infected patients develop chronic HCV infection C (4-7). This can vary depending on patient age, sex, inoculum volume, the source of infection, a number of co-factors and the immune status of the host (7). Chronicity rate is higher in asymptomatic than in symptomatic hepatitis (8). Unlike the treatment of chronic hepatitis, controlled trials and practice guidelines for the treatment of acute hepatitis C are still lacking. However, there are some evidences that antiviral therapy reduces the risk of progression to chronicity (1,5,9). In this report, a short-term treatment strategy with combination of interferon-α2b (IFN-α2b) plus ribavirin is presented to prevent development of chronic hepatitis C.

Case report

A 24-year-old health care worker, employed in our hospital, admitted to our department in March 2002 with an accident history of a sample tube containing a patient's blood was broken in his hand. There was a deep cut on his two fingers. The donor patient was suffering from chronic renal disease. Also, HCV antibody and HCV RNA were found as positive in his serum. However, hepatitis B surface antigen (HBsAg) and human immunodeficiency virus (HIV) antibody were negative. Immediately after the exposure, HBsAg, HCV and HIV antibody were tested and serum levels of aminotransferase were measured in his serum samples. HCV antibody and others were negative and aminotransferase levels were normal. Then he was taken into hepatitis B vaccination program, followed prospectively and he was checked bi-monthly. Two months after the exposure, he has no complaint and his physical examination was normal. Biochemical findings revealed that alanine aminotransferase (ALT) level was 357 IU/L, aspartate aminotransferase (AST) level was 158 IU/L, total bilirubin was 0,8 mg/dL, and gamma glutamil transferase (GGT) level was 116 IU/L. Serological findings included that HBsAg, IgM antibody to hepatitis B core antigen (anti-HBc IgM) and IgM antibody to hepatitis A virus (anti-HAV IgM) were negative. But he was positive for HCV antibody by third generation enzyme immunoassay (EIA) (Innogenetics, Belgium). Furthermore qualitative and quantitative HCV RNA (542 copy/mL) was detected in serum by polymerase chain reaction (PCR) (Amplicor HCV Monitor test, Roche Diagnostics, Switzerland).

Because of patient's history and these laboratory findings, he was diagnosed with acute hepatitis C. Accordingly, he was given IFN-α2b (Intron A, Schering-Plough, USA) 5 MU subcutaneously three times a week and ribavirin (Rebetol, Schering-Plough, USA) 1000 mg daily were initiated nine weeks after exposure (or one week after diagnose of acute hepatitis C). The ALT values fell rapidly during therapy and normalised within third weeks and HCV RNA was undetectable at the end

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of the first month of the therapy. Flu-like symptoms in the first week and anxiety during the therapy were observed. Therapy could be given for only three months, because the patient refused to continue. Nineteen months after cessation of therapy, normal ALT levels and clearance of HCV RNA is still continuing (sustained response).

Discussion

People who presented acute hepatitis C symptomatically are estimated 10% to 20% of the total reported cases. Acute hepatitis C is clinically asymptomatic in 50% to 80% of cases (9,10). The asymptomatic patient is often detected via surveillance such as, following a needlestick exposure to a known carrier. HCV RNA can be detected in blood approximately 10 days after the exposure. Levels of aminotransferases rise within weeks of detection of HCV RNA (3). Among health care workers who have acute hepatitis C, HCV antibody is usually detected with the use of a third-generation EIA within 7-24 weeks after contamination (3). Spontaneous HCV RNA clearance is possible in 35.3% to 52% of patients with acute hepatitis C within a few months after the onset of symptoms. However chronicity rate is higher in asymptomatic than in symptomatic hepatitis and no patient who presented asymptomatically lost HCV RNA without treatment (5,8). The high propensity of acute hepatitis C to progress to chronic form, provides a strong rationale for antiviral therapy. Our patient was asymptomatic and male, so it was considered that immediate therapy would be more effective.

There are no clinical data demonstrating the effectiveness of antiviral treatment (IFN-α with or without ribavirin) to prevent HCV infection after an exposure (3). However data from controlled and uncontrolled studies suggest that IFN therapy may prevent chronic hepatitis C, when used in patients with acute hepatitis C (9,10). Many studies including standard IFN monotherapy were reported (4,6,8-11). Different schedules of IFN therapy (3-5-6-10 MU IFN-α three times a week or 2-10 MU IFN-α daily) were tried (4,6,8-10). Increasing the dose and/or daily use of IFN-α raised both the virological and biochemical response rate. In some studies, IFN dosage was used daily in the first two to four weeks of therapy and then it was administered three times a week (4,6,8-11). Duration of therapy in weekly protocol was three to six months and in daily protocol it was four to eight weeks or until normalisation of aminotransferases (4,6,8-11). The optimal dosage and duration of IFN therapy is still not defined (4,10). Sustained response was assessed 25% to 98% of patients by different therapies (8,11). Almost all published studies on therapy of acute hepatitis C have been small in size, uncontrolled, and highly heterogeneous as to patient features, dose and duration of treatment, follow-up evaluation, and criteria used to define efficacy and safety. Standard therapy of chronic hepatitis C is IFN-α and ribavirin combination, which is more effective than IFN monotherapy (3,12). However some few studies and cases with acute hepatitis C treated with combination therapy were reported recently (1,3,5,11,13,14). In these reports, totally eight cases were treated by the combination therapy for one to six months and sustained response was achieved in seven cases (87.5%).

IFN-α2b plus ribavirin was given to the patient presented here when acute asymptomatic hepatitis C was diagnosed. With combination therapy rapid decrease in ALT levels in the third week of the therapy and undetectable HCV RNA in the first month were obtained. The treatment was stopped at the end of the third month, because of early normalisation of the laboratory findings and refusal of the longer therapy by the patient. ALT levels are normal and HCV RNA is still negative 19 months after completion of therapy, so sustained response was achieved. The therapy was well tolerated and there were few adverse effects. Hence IFN causes a lot of adverse reactions and has poor effects on life quality especially when used daily and longer duration (12,15). By means of the combination therapy, there may be no need daily induction dose of IFN and duration of therapy may shorten.

In summary, high-risk individuals who have an exposure history should be followed periodically to diagnose acute hepatitis C. This report suggests that early and short-term therapy with IFN-α2b plus ribavirin is effective and safe for acute hepatitis C and may be an alternative to other treatments. More studies with large sample size are needed to define optimal therapy.

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