HCV Viruses: A New Problem in Pediatric Dialysis Patients?

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Dear Sir,

Relatively little information is at present available on the prevalence of the hepatitis C virus infection (HCV) in dialysis pediatric patients [1]. In adult hemodialysis patients it ranges from 1% in the UK to 50% in Brazil [2, 3]. This study has been undertaken to assess the frequency of anti-HCV positivity in the Hemodialysis Unit (staff and patients) of the Belgrade University Children’s Hospital, and to evaluate its possible correlations with blood transfusions, hemodialysis age and biochemical indexes of chronic hepatic disease.

Twenty-four patients underwent examination, 14 girls and 10 boys, who were on chronic hemodialysis from 1 to 164 months (mean age 13.33 ± 4.37 years and dialysis duration 29.75 ± 45.54 months). Four of them had hepatitis B virus infection (HBV) at least 1 year ago, and 8 had been given HBV vaccine. Of 24 patients, 20 had received one or more blood transfusions. Ten staff members (1 doctor, 1 medical technician and 8 nurses) were also evaluated. They have worked at the Hemodialysis Unit for an average 9.3 years (range 3-12 years). None of the staff members had history of blood transfusions, but 5 of them had HBV infection at least 4 years ago, and 4 had been give HBV vaccine.

In periodic checks, biochemical assays (including alanine transaminase levels) were done monthly in all patients with a multichannel autoanalyzer. Complete screening for HBV, including HB surface antigen (HBs Ag), HB core antigen (HBe Ag), HBe antigen (HBe Ag) and antibodies to HBs, HBe and HBc antigens were done by enzyme immunoassays (Elisa) at the same time as the tests for HCV antibodies. These screenings were carried out in November 1990 (15 patients), July 1992 (14 patients) and September 1992 (13 patients), using for anti-HCV assay the Elisa test; the first generation test for the first check-up and the second generation tests for the others (table 1). Five patients were tested three times and 8 patients twice. Staff members
were tested in September 1992 by Ubi-Organon HCV system second generation test. Statistical analysis was done using the Student’s t test or Pearson test.

All patients and staff members were HBV Ag negative. Eleven patients and 9 staff members had one or more HBV antibodies due to HBV infection (4 patients and 5 staff members) or HBV vaccine. None of the staff members had HCV antibody, while overall prevalence in the patients was high reaching 50%. It raised with dialysis time, however more specific and sensitive HCV antibody assays were used for the second and third screenings. Nevertheless, all retested and HCV-positive patients remained HCV positive. As regards blood transfusions, we observed that HCV infection was more frequent in polytransfused patients. Five transfused anti-HCV-positive patients had received blood transfusions 4-10 months before the test which discovered HCV antibody, while in the remaining 4 patients that period was over 11 months. However, 3 anti-HCV-positive patients had

Table 2. Risk Factors for HCV infection in dialysis pediatric patients

never been transfused, suggesting that cross-contamination in dialysis units may be important in the diffusion of HCV infection. All patients with positive HBV infection anamnesis belonged to the group of anti-HCV-positive patients. Thus, the patients with previous HBV infection seemed to be more vulnerable to HCV infection. Also, intermittently or persistently elevated ALT levels (at least twice) were found in 60% anti-HCV-positive and only in 20% anti-HCV-negative patients (table 2).

Conclusion: Our results indicate that pediatric dialysis patients are at high risk of hepatitis C. In agreement with other investigators [4, 5], a number of anti-HCV-positive patients increased with time on dialysis and when using the second generation assays. Twenty-five percent of anti-HCV-positive patients have never been transfused, suggesting that cross-contamination in dialysis units is also very important, which points to the need for improved control-preventive measures. Contrary to observation for HBV infection, transmission of HCV to hemodialysis staff is highly unlikely.

References


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