

LETTERS TO THE EDITOR

Occult hepatitis C virus infection is more common than hepatitis B infection in maintenance hemodialysis patients

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Abstract

Patients of end stage renal disease on maintenance hemodialysis were enrolled to study the prevalence of occult and dual hepatitis B virus (HBV) and hepatitis C virus (HCV) infection and non-occult hepatitis B and C virus infection. One hundred and two patients were enrolled. Thirty patients had HCV infection, three of them were positive in anti-HCV. So, 27 (90%) of HCV-positive patients had occult HCV infection. Eleven (11%) patients had HBV infection. Five patients were positive in anti-HBc or HBV-DNA, but negative in HBsAg (occult HBV infection). Three (3%) patients had dual HBV and HCV infection. None of the patients showed changes in viral markers during the follow-up of 8 mo on average (1-12 mo).

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TO THE EDITOR

We read with interest the article "Hepatitis B viral infection in maintenance hemodialysis patients: A three-year

follow-up" by Cao *et al* in 13(45): 6037-6040, 2007, *World Journal of Gastroenterology*^[1]. We agree that the hepatitis B vaccination and regular surveillance for hepatitis B virus (HBV) infection has reduced the spread of HBV in the dialysis population. The prevalence of hepatitis C virus (HCV) infection in hemodialysis (HD) patients is high and ranges from 2% to 60% between countries and among dialysis units^[2]. The prevalence of HBV and HCV occult and dual infection^[3,4] in hemodialysis patients has been variably reported.

We prospectively studied consecutive patients of end stage renal disease (ESRD) on maintenance of HD from June 2006 to June 2007 for prevalence of occult and dual hepatitis B and C virus infection and non-occult hepatitis B and C virus infection. Occult hepatitis C infection was defined as anti-HCV negative and HCV-RNA positive by polymerase chain reaction^[3,5]. All patients underwent tests of hemoglobin, urea, creatinine, bilirubin, alanine aminotransferase (ALT) and aspartate aminotransferase (AST). The viral markers done were hepatitis B surface antigen (HBsAg), antibody to hepatitis B surface antigen (anti-HBs), antibody to hepatitis B core antigen (anti-HBc), hepatitis B envelope antigen (HBeAg), antibody to hepatitis Be antigen (anti-HBe), antibody to hepatitis C virus (anti-HCV) by enzyme linked immunoassay (ELISA) and qualitatively hepatitis B virus DNA (HBV DNA) and hepatitis C virus RNA (HCV RNA) by polymerase chain reaction.

The demographic, clinical features, biochemical parameters, etiology, history of blood transfusion and time on hemodialysis are described in Table 1. One hundred and two patients were enrolled. The mean age was 41.4 years (range 17-70 years) with a male: female ratio of 68:34. The clinical presentations were generalized swelling 36 (36%), decreased urine output 34 (34%), breathlessness 30 (30%), hypertension 24 (24%) and altered sensorium in 8 patients. The mean hemoglobin, urea, creatinine, bilirubin, AST and ALT were 76.5 mg/L (33-122 mg/L) 184.3 mg/L (84-322 mg/L), 10.8 mg/L (4-23 mg/L), 0.6 mg/L (0.4-0.8 mg/L), 53.5 unit/L (26-188 unit/L) and 38.6 unit/L (16-209 unit/L). Thirty-four patients had histories of blood transfusion.

Among HD patients with HCV infection, serum ALT was elevated in 10 HCV-RNA positive patients, but normal in all the anti-HCV positive patients. Thirty (30%) patients had HCV infection, three them had anti-HCV positivity. So, twenty-seven (90%) of HCV-positive patients had occult HCV infection.

Eleven (11%) patients had HBV infection. Five patients

Table 1 Demographics, clinical and biochemical parameters of patients on maintenance hemodialysis

Male:Female	68:34
Age (yr) ¹	41.4 (17-70)
Clinical features, cases (%)	
Generalised swelling	36 (36)
Oliguria	34 (34)
Breathlessness	30 (30)
Hypertension	24 (24)
Altered sensorium	8 (8)
Laboratory parameters ¹	
Hemoglobin (mg/L)	76.5 (33-122)
Urea (mg/L)	184.3 (84-322)
Creatinine (mg/L)	10.8 (4-23)
Bilirubin (mg/L)	0.6 (0.4-0.8)
Aspartate aminotransferase (unit/L)	53.5 (26-188)
Alanine aminotransferase (unit/L)	38.6 (16-209)
History of blood transfusion, cases (%)	34 (34)
Past history of jaundice, cases (%)	4 (4)
Etiology, cases (%)	
Chronic glomerulonephritis	44 (44)
Chronic interstitial nephritis	20 (20)
Diabetes mellitus	20 (20)
Polycystic kidney disease	5 (5)
Glomerulopathy, unknown	13 (13)
Time on hemodialysis (mo) ¹	34 (12-60)

¹Mean (range).

were positive in anti-HBc or HBV-DNA but negative in HBs Ag (occult HBV infection). Rai *et al* reported 12.2% occult HBV infection and 10.3% occult HCV infection in human immunodeficiency virus patients^[5]. Goral *et al* reported that occult HBV infection was not high in chronic HCV infected patients on HD^[6].

Three (3%) patients had dual HBV and HCV infection. Reddy *et al* found dual infection in 3.7% of patients on HD^[4]. None of the viral markers were positive in 20 patients. Four patients had past histories of jaundice, three of them had HBV infection and one was positive in HCV-RNA.

Thirty patients with positive viral markers had histories of blood transfusion ranging from 1-6 units. Agarwal *et al*^[7] showed in their studies in 208 ESRD patients with past histories of jaundice and the number of blood transfusion was significantly higher in HCV positive patients than in HCV negative patients. In our study, blood transfusion history was present in most of the patients ($n = 26$) with HCV infection. Two patients had past histories of jaundice.

On follow-up of mean 8 mo (1-12 mo), none of the patients showed change in viral markers. Twelve patients died of cardiac arrhythmias due to hyperkalemia, fluid overload due to inadequate dialysis and sepsis. In our study, the development of cirrhosis, hepatocellular carcinoma

and decompensation of liver function were not observed in HCV and HBV infected patients.

Yakaryilmaz *et al* in their group of 188 ESRD patients on maintenance of HD showed 28.7% had both occult and non-occult forms of HCV infection which was more common than HBV (19.7%) infection^[3].

HBV infection was present in 11% of patients on maintenance HD possibly due to a higher percentage (44%) of patients having protective anti-HBs titres. In the previous studies, HBV DNA positive hemodialysis patients had a significantly lower prevalence of past HBV vaccination and lower anti-HBs titres in serum than HBV DNA-negative patients of the same group^[8]. Nijhawan *et al* did the screening of 69330 subjects for HBsAg and found that prevalence of HBsAg in replacement donors was 3.1% and 2.1% in healthy voluntary donors^[9]. So, HBV infection is relatively higher in patients on HD.

So, HCV-RNA is recommended in patients on HD and now has been included in our screening program prior to renal transplantation. HBV vaccination of HD patients is an effective way of limiting the risk of transmission of HBV infection to patients on hemodialysis.

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