Indian Journal of Medical Microbiology, (2005) 23 (1):41-43

Brief Communication

PREVALENCE OF HBV AND HCV DUAL INFECTION IN PATIENTS ON HAEMODIALYSIS

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Abstract

Hepatitis viral infections are important causes of morbidity and mortality in haemodialysis patients. One hundred and thirty four patients attending haemodialysis unit were screened for the presence of HBV and HCV infections. Eight (5.9%) patients were HCV positive while two (1.4%) patients had HBV infection. A dual infection with both the viruses was observed in five patients (3.7%).

Key words: *Chronic renal failure, ELISA, Haemodialysis, Hepatitis*

Hepatitis B (HBV) and hepatitis C (HCV) viral infections are important causes of morbidity and mortality in haemodialysis patients[1] and pose problems in the management of the patients in the renal dialysis units. Chronic renal failure patients do not clear these viral infections efficiently. Several outbreaks of hepatitis have occurred in these settings[2]. HBV infection is less prevalent than HCV in haemodialysis units.[3] Introduction of HBV vaccination, isolation of HBV positive patients, use of dedicated dialysis machines and regular surveillance for HBV infection dramatically reduced the spread of HBV in this setting[4]. The prevalence of HCV infection among haemodialysis is high and varies between countries (2% to 60%) and between dialysis units within a single country.[5] Dual infection with HBV and HCV leads to more aggressive liver disease.[6] There are very few reports on the prevalence of such dual infections in haemodialysis patients. The present study was undertaken to estimate the prevalence of HBV and HCV dual infection among haemodialysis patients.

Materials and Methods

One hundred and thirty four chronic renal failure patients undergoing haemodialysis in the dialysis unit of the nephrology department of Nizam's Institute of Medical Sciences, Hyderabad, between May 2003 and April 2004 were included in the present study. The dialysis unit has eight haemodialysis machines. Among these, one is dedicated for HBV and HBV/HCV co-infected patients and one machine is dedicated for HCV positive patients. Both the machines are placed away from the rest of the machines in an isolated room, so as to avoid cross contamination. The dialyzers of the patients are reused. Reprocessing of the dialyzers of the HBV / HCV positive patients are done in a separate room, away from the rest of the patients. Dedicated nursing staff look after each patient during the dialysis session. Blood samples were drawn from the patients before the start of the first haemodialysis and every month thereafter. The serum samples were screened for HBsAg and anti HCV antibody. All the HBsAg negative patients were given HBV vaccination. Any patient positive for HBsAg or anti HCV or to both were dialyzed on the dedicated machines. Testing of the serum samples of the patient was done by the commercially available third generation Anti HCV ELISA (ORTHO HCV 3.0 ELISA test system with enhanced SAVe) and HBsAg (HEPANOSTIKA HBsAg UNIFORM II, bioMerieux, France) in the microbiology department of our institute. Data were also collected from 1018 patients (non-haemodialysis group) who were screened for HBV and HCV during the same period.

Results

Out of 134 patients, eight were positive for only anti HCV (5.9%), two patients were positive for HBsAg (1.4%) and dual infection was observed in another five patients (3.7%). All the five patients had a risk factor of history of 2-4 units of blood transfusion before becoming positive.

Three out of five patients, who were initially positive for HBsAg and anti HCV, had history of haemodialysis elsewhere before coming to our centre. The remaining two patients were initially negative for HBsAg and anti HCV. They received the first two doses of HBV vaccination (Engerix B) during their first two months of haemodialysis. Following this, they seroconverted to both HBsAg and anti HCV in a span of one month.

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Received: 12-06-2004
Accepted: 27-07-2004

While two out of five patients with dual infection expired, two patients continue to be on maintenance haemodialysis and one patient is on continuous ambulatory peritoneal dialysis (CAPD). In 1018 non-haemodialysis patient group, dual infection was observed in only one patient (0.09%).

Discussion

HBV and HCV share a common route of transmission and can coexist with each other. Haemodialysis patients are at high risk for hepatitis viral infections due to the high number of blood transfusions, prolonged vascular access and the potential for exposure to infected patients and contaminated equipment.[7] Patients with chronic HBV and HCV concurrent infection show a reciprocal inhibition of viral genomes, an association with a severe clinical presentation and an infrequent response to interferon alfa treatment.[8]

Significant immune status disturbances were registered in haemodialysis patients infected with both HBV and HCV compared to patients with HCV alone. A significant risk of cirrhosis development and decompensation of liver function is observed in HBV and HCV infected haemodialysis patients.[9]

Prevalence of HBV and HCV co-infection in non-haemodialysis patients was reported by several authors and ranged between 3 to 56%.[6,10,11] A simultaneous study carried out on 75 patients with chronic liver disease by the gastroenterology department of our institute showed a prevalence rate of dual infection of 4% (personal communication).

Studies on prevalence of HCV and HBV coinfection in haemodialysis are rare. Kara *et al* reported dual infection in three patients out of 67 haemodialysis patients.[12] Kuan *et al* reported dual infection of 30.4% and it was higher than non haemodialysis patients which was only 3.8%[13] in their series . In our study, we found 3.7% prevalence of dual infection in haemodialysis patients, which was higher than among the non-haemodialysis patients (0.09%).

In conclusion, dual infection with HBV and HCV, though rare, occurs more frequently in certain risk groups. The risk is greater among the CRF patients due to the frequent exposure to blood from transfusions and extracorporeal circulation during haemodialysis. Immunization with HBV vaccine before beginning the dialysis will reduce infection of HBV and strict adherence to universal precautions in the dialysis units may help to decrease the prevalence of both infections among these high-risk patients. However, in our series, two patients developed HBV infection as they had an incomplete vaccination course (two doses only) and were anti HBsAg negative. These patients should be identified early and managed appropriately so as to reduce the risk of long term complications like cirrhosis.

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