

Prevalence of Hepatitis B and Hepatitis C in haemodialysis population in a tertiary care centre in north eastern India

Md Jamil^{*1}, P K Bhattacharya¹, Md Yunus², C J Lyngdoh³, Akash Roy¹ and K K Talukdar¹

¹Department of General Medicine, NEIGRIHMS, Shillong, India

²Department of Anaesthesiology and Critical care, NEIGRIHMS, Shillong, India.

³Department of Microbiology, NEIGRIHMS, Shillong, India.

*Correspondence Info:

Dr. Md Jamil

Assistant Professor

Department of General Medicine,

NEIGRIHMS, Shillong, India

E-mail: mdjamil81@gmail.com

Abstract

Background: Prevalence of Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) in the haemodialysis (HD) population varies between 3.4–45% and 4.3–45.2% respectively which are substantially higher than the prevalence rates in the general population. We conducted a study to estimate the prevalence of HBV and HCV in HD population in a tertiary care centre in north east India.

Methods: Prospective single centre observational study conducted in patients attending a HD unit between November 2012 and June 2015. All patients with Chronic Kidney Disease who underwent haemodialysis were included. Patients with Acute Kidney Injury were excluded. Hepatitis B surface antigen (HBsAg) and anti-HCV were tested using specific enzyme-linked immune-sorbent assay (ELISA) kits.

Results: 507 patients with a male to female ratio of 1.26:1 were included. Overall mean age was 45.70±17.54 years. (Male=43.94±17.32years; Female=47.81±17.51years).69.82% of the patients underwent once weekly dialysis. 2.17% were found to be positive for HBV while and 1.38% patients were found to be positive for HCV. HBV-HCV co-infection was seen in 0.20%. All HBV positive patients were males and had previous blood transfusions.

Conclusion: HBV and HCV is seen to affect a significant number of the End Stage Renal Disease (ESRD) patients undergoing HD. Measures including safe transfusion practices, vaccination and equipment disinfection should be undertaken to reduce the burden of such infections in ESRD patients.

Keywords: HBV, HCV, Haemodialysis

1. Introduction

Haemodialysis (HD) is a primary mode of therapy for patients with End Stage Renal Disease (ESRD). HD as it has an extracorporeal technique is associated with increased risk of parentally transmitted viruses including the Hepatitis B virus (HBV) and the Hepatitis C virus (HCV). The prevalence rates of these infections are variable in different parts of the world.[1] Previous reported data from indicate that prevalence rates of HBV and HCV in the HD population vary between 3.4–45% and 4.3–45.2% respectively.[2] Such prevalence rates are substantially higher than the prevalence rates in the overall general population which is estimated to be in the range of 4.7% and 1.85% for HBV and HCV respectively.[3]

The comparatively higher prevalence in the HD population of HBV and HCV viruses may be due to cross infection from other patients due to sharing of common equipments and requirements of multiple blood

transfusions.[4] Synergistic infection with HBV and/or HCV in patients with ESRD predisposed the patient for accelerated progression of the disease.[5] With this background we carried out a study to find out the sero-prevalence of HBV and HCV in patients undergoing haemodialysis in a tertiary care centre in north east India.

2. Materials and Methods

This was a prospective single centre study conducted in patients attending the HD unit in a tertiary care hospital in Shillong, Meghalaya which caters to large sections of the ESRD patients in the state of Meghalaya and adjoining north eastern states. The study was conducted between November 2012 and June 2015 and included all ESRD patients who underwent dialysis in this centre.

2.1 Inclusion Criteria

1. All patients with Chronic Kidney Disease[6] who underwent haemodialysis

2.2 Exclusion Criteria

1. Patients with Acute Kidney Injury

Informed consent was obtained from all patients prior to undertaking the study. Demographic data was collected and entered in pre-structured questionnaire. Blood was drawn from each patient and the sera were tested for Hepatitis B surface antigen (HBsAg) and anti-HCV using specific enzyme-linked immune-sorbent assay (ELISA) kits.

2.3 Statistical analysis

Statistical analysis was performed using Microsoft Excel and SPSS version 16 (SPSS Inc., Chicago, IL, USA).

3. Results

A total of 507 patients were included of whom 283(55.82%) were males 224 (44.18%) were females with a male to female ratio of 1.26:1. The most common age group was those between 51-60 years (21.70%) followed by 21-30 years (17.36%) and 41-50 years (15.78%). The mean age of the study population was 45.70±17.54 years. The mean age of the male and female population was 43.94±17.32years and 47.81±17.51years respectively. The age distribution of the study population is depicted in Table 1.

A majority of the population (69.82%) underwent once weekly dialysis while 14.40% and 0.79% underwent dialysis on a twice weekly or thrice weekly basis. A significant number of the population (14.99%) underwent dialysis on an irregular basis. The frequency of haemodialysis among the population has been shown in Table 2.

11 patients (2.17%) were found to be positive for HBV while and 7(1.38%) patients were found to be positive for HCV. 1 patient was found to have HBV/HCV co-infection. All the patients who tested positive for HBV were males with a mean age 48.91±14.84 years. In the HCV positive cases 3 patients were male and 3 were female with a mean age of 49.2±17.10 years. History of blood transfusion was present in all the patients who were positive for HBV while it was present in 2 patients who tested positive for HCV. The seropositivity of HBV and HCV has been shown in Table 3.

Table 1: Showing the age distributions of ESRD patients

Age Group	Number of patients (%)
0-10	6 (1.18)
11-20	34(6.71)
21-30	88(17.36)
31-40	67(13.21)
41-50	80(15.78)
51-60	110(21.70)
61-70	65(12.82)
71-80	31(6.11)
≥81	26(5.13)

Table 2: Showing frequency of haemodialysis in ESRD patients

Frequency of Haemodialysis	Number of patients (%)
Once Weekly	354(69.82)
Twice Weekly	73(14.40)
Thrice Weekly	4(0.79)
Irregular	76(14.99)

Table 3: Showing prevalence of HBV and HCV infection in haemodialysis population

Viral Marker	Seropositivity (%)
HbsAg	11(2.17%)
Anti HCV	7(1.38%)
Both (HbsAg +Anti HCV)	1(0.20%)

4. Discussion

The haemodialysis population is at an increased risk of parenteral viral hepatitis infections in lieu of repeated blood transfusion sessions, increased rates and duration of vascular access and the potential for cross infection with patients and contaminated equipment.[7]

In the Indian context, HBV prevalence in HD patients range from 3.4% to 45% which is higher in comparison to the prevalence of 4.7% in the general population.[2,3]A previous study from India has also reported a prevalence of 11.5% in the HD population.[8] In our study we reported a prevalence of HBV of 2.17% in the HD population. In our study we found that HBV infection was more common in males undergoing HD and also in patients who had history of repeated blood transfusions. A previous study has reported similar findings of higher prevalence of HBV in male population undergoing HD. [9]

In India the HCV prevalence rate in the general population is 1.85.[3] Literature from various Indian studies report a variability in HCV prevalence even in the HD population in the range 4.3% to 46%.[10,11] In our study we reported a prevalence of 1.38% which is similar to the prevalence rates in the overall Indian population in general.[3]

In India dual infection of HBV and HCV has been reported to be in the range of 3%–3.7% of patients undergoing HD.[5, 8] In our study we found the rate of HCV HBV co-infection to be extremely low at 0.20%.

5. Conclusion

Our study showed a significant number of the HD population being infected with parenteral hepatitis viruses. Though our prevalence rates are at par with the prevalence rates in the general population in India, data about the overall prevalence rates of these viral infections in the general population of this part of the country is scarce. Safe transfusion practices, enhanced vaccination coverage and proper disinfection procedures of HD equipments should be undertaken to reduce the burden of parentally transmitted hepatitis virus in the ESRD population.

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Conflict of Interest: Nil