

Determine the Frequency of Hepatitis B and C in Patients Undergoing Hemodialysis

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ABSTRACT

Aim: To determine the frequency of hepatitis b and c in patients undergoing hemodialysis.

Study Design: Descriptive study.

Place and duration of study: Department of Gastroenterology, Chandka Medical College Hospital/Shahid Mohtarma Benazir Bhutto Medical University Larkana & Dialysis Unit, Chandka Medical College Hospital, Larkana from 1st October 2020 to 30th September 2021.

Methodology: One hundred patients undergoing hemodialysis were tested for hepatitis B and C after their informed written approval gain. The age, gender and clinical history were recorded. Each patient 5cc blood was withdrawn and EDTA was added for creating whole blood which was then stored at 4°C for a day and tested. The blood was first tested before hemodialysis start and then after every month until 6 months of hemodialysis was tested for presence of hepatitis B and C through polymerase chain reaction (PCR).

Results: The mean age was 51.27±12.0 years with 14-77 years of patients enrolled for hemodialysis. Majority of the patients were men with a percentage of 52% while women as 48% in the total cases. The serological results showed that hepatitis B positive was presented as 8% and hepatitis C positive as 4% in total hemodialysis cases. Hepatitis B was more common in those cases where blood transfusion was performed more than 5-10 times or more.

Conclusion: Prevalence of HBV was higher in hemodialysis patients who had more blood transfusions.

Keywords: Frequency, Hepatitis B, Hepatitis C, Pakistani population

INTRODUCTION

Hepatic viral infection carries a worldwide threat with hepatitis B affecting around 390 million individuals and having a five percent global prevalence. Its lethal effects on health can be accessed from 145 million people carrying this infection only in year 2017.¹ Pakistan has highest prevalence of hepatic infections such as hepatitis B and C after African countries who has 7% population suffering from hepatitis B infection.² Despite the fact that hepatitis B virus has vaccine against it. Still the number of cases infected is higher in developing countries.³ The hepatitis infection leads into end stage liver disease, cirrhosis and carcinoma³.

Hepatitis C treatment has been revolution with the introduction of new viral drugs for its treatment; however the global prevalence still remains higher as 1% among general population ⁴. The transmission of hepatitis B and C is based on blood-to-blood transfer. This can occur either through hepatitis B and C contaminated needle prick in another individual, unprotected sexual contact with infected person, non-sterilized surgical procedure and blood transfusion.^{5,6}

The most common viruses found during hemodialysis cases are hepatitis B and C.⁷ Patients undergoing hemodialysis are at the highest risk of developing hepatitis B and C infections through blood transmission.⁸ The reason being the procedure of hemodialysis required blood removal from patient through needle and plastic tube followed by pumping of blood in the dialysis-membrane. Toxic substances cross the dialysis-membrane and then

dialysate discarding harmful materials further returning the blood back into the patient.⁹

A high ratio of renal patients undergoes hemodialysis every year and is critically suffering from end stage renal impairment.¹⁰⁻¹² In the above scenario their health deprivation cannot afford hepatic viral infection which additionally aggravates physiological health complications leading to irreversible bodily damage. The present study was designed to identify the prevalence of hepatitis B and C in hemodialysis patients. This study results will help in assessing the exact magnitude of problem for better management of it and increase of health-related positive prognosis in hemodialysis patients.

MATERIALS AND METHODS

This descriptive study was performed at Department of Gastroenterology, Chandka Medical College Hospital/Shahid Mohtarma Benazir Bhutto Medical University Larkana & Dialysis Unit, Chandka Medical College Hospital, Larkana from 1st October 2020 to 30th September 2021. A 100 patients undergoing hemodialysis were tested for hepatitis B and C after their informed written approval gain. The age, gender and clinical history were recorded. Each patient 5cc blood was withdrawn and EDTA was added for creating whole blood which was then stored at 4°C for a day and tested. The blood was first tested before hemodialysis start and then after every month until 6 months of hemodialysis was tested for presence of hepatitis B and C through polymerase chain reaction (PCR). Those patients who were already tested positive for hepatitis B or and C on initial screening before the starting

of hemodialysis were excluded from the study. The data was entered and analyzed through SPSS-25.

RESULTS

The mean age of the patients was 51.27 ± 12.0 years with 14-77 years of patients enrolled for hemodialysis. Majority of the patients were men with a percentage of 52% while women as 48% in the total cases (Table 1).

The age distribution with hepatitis B and C as seen in various hemodialysis patients showed that hepatitis C was more commonly observed in Pakistani population undergoing hemodialysis with highest percentage presented in elderly patients such as 40%. Hepatitis B was also presented highest in 61-77 years of group with an incidence of 30% in them followed by 41-60 years of group having an incidence of 25% (Fig. 1).

The serological results showed that hepatitis B positive was presented as 8% and hepatitis C positive as 4% in total hemodialysis cases. There were only one patient who suffered from both hepatic viral infection such as B and C (Table 2).

Hepatitis B was more common in those cases where blood transfusion was performed more than 5-10 times or more, similar results were found for hepatitis C patients (Table 3).

Fig. 1: Association of age of hemodialysis patients with percentage presentation of hepatitis B and C

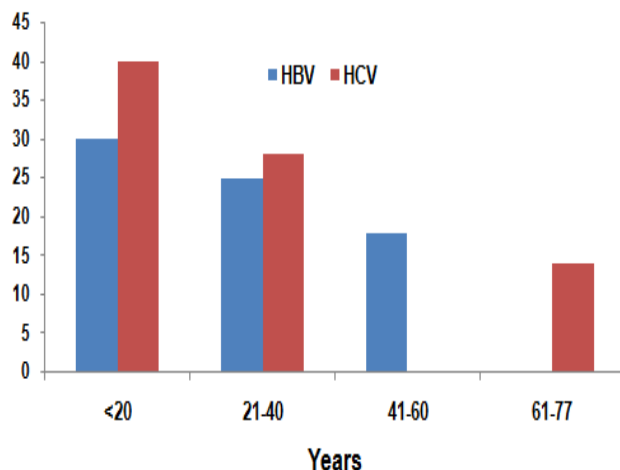


Table 1: Distribution of age and gender within study cases (n=100)

Variable	No.	%
Gender		
Male	52	52.0
Female	48	48.0
Age (years)	51.27 ± 12.0	

Table 2: Prevalence of hepatitis B and C in hemodialysis patients (n=100)

Serological results	No.	%
Negative	87	87.0
Hepatitis B positive	8	8.0
Hepatitis C positive	4	4.0
Both hepatitis B and C positive	1	1.0

Table 3: Blood Transfusion history and incidence of hepatitis B and C

Blood Transfusion History	Hepatitis B	Hepatitis C
No blood transfusion	1 (2%)	1 (2%)
Less than 5 times transfused	1 (1%)	-
5-10 times transfused	4 (3%)	2 (2%)
10-15 times transfused	4 (2%)	2 (1%)

DISCUSSION

The rate of morbidity and mortality greatly increases with the viral hepatic infections as hepatitis B and C. The inflammation caused can be life threatening.¹³⁻¹⁵ In patients which are already suffering from reduced immune response are more prone towards life threatening conditions by hepatitis infections.¹⁶

Adane and Getawa⁷ have supported the fact that multiple blood transfusions and reduced immunity in the body of renal end stage patients is a high risk for hepatitis B and C viral infections in comparison with the general population of a region.

The prevalence of hepatitis B in developing countries and underdeveloped countries has been reported as 18.9% within younger age groups and of hepatitis C as 4-24% which is alarmingly high.¹⁷ The lack of proper management of hemodialysis machines and improper care in hospitalization is a major reason for high prevalence of hepatitis B and C in hemodialysis patients.¹⁸

Various researches has elaborated the fact that incidence of hepatic viral infections such as B and C is much higher in hemodialysis cases at elderly age. As the number of blood transfusions as well as immunity falls in this age group making them more prone towards viral infections.^{19,20}

CONCLUSION

The prevalence of HBV and HCV within the hemodialysis patients was noted as 8% and 4% respectively with high risk in those patients who had more blood transfusions than those having lessened.

Conflict of interest: Nil

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