

PREVALENCE OF HEPATITIS IN HAEMO DIALYSIS PATIENTS IN RESOURCE LIMITED TERTIARY CARE CENTER

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ABSTRACT

This study investigates the prevalence of Hepatitis C (HCV) and Hepatitis B (HBV) among hemodialysis patients in a resource-limited setup. The study aims to understand the burden of these viral infections in this vulnerable population and provide insights into the challenges posed by limited resources. A literature review approach has been adopted, focusing on relevant studies conducted within similar healthcare settings. The findings reveal the high prevalence of HCV and HBV infections, emphasizing the urgent need for comprehensive preventive measures and improved access to diagnostics, treatment, and vaccination in resource-limited dialysis centers

MATERIALS AND METHODS:

This prospective study was conducted at a tertiary teaching hospital, Nellore over 12 months. All the patients above the age of 18 years who were diagnosed with chronic kidney disease on maintenance haemodialysis were screened for hepatitis b ag and hcv antibody and by using CBNAAT method for HBV DNA ,HCV RNA . All the necessary clinical and laboratory investigation parameters of the patients were noted and the data was analyzed by frequency and percentage.

RESULTS:

During the study period, a total of 100 chronic kidney disease cases were included in the study. Of these, there were 18 (18%) females and 82(82%) males patients between 40 and 80 years of age. Common age group 51 -60yrs dialysis duration 1-2 yrs.

conclusion

In conclusion, the prevalence of Hep C and Hep B in patients undergoing hemodialysis is higher in resource-limited settings due to a variety of risk factors. As a result, it is important that countries in these settings take steps to improve infection control and prevention measures to reduce the burden of these infections

KEYWORDS: "hepatitis C," "hepatitis B," "hemodialysis," "prevalence,"

INTRODUCTION:

Hemodialysis patients are particularly susceptible to blood-borne infections, with Hepatitis C (HCV) and Hepatitis B (HBV) being major concerns. ^{1,2}Resource-limited setups face unique challenges in providing adequate preventive measures and treatment options. This research paper intends to explore the prevalence of HCV and HBV among hemodialysis patients within a resource-limited framework and shed light on the implications of such circumstances. Hepatitis C (Hep C) and hepatitis B (Hep B) are two of the most common chronic liver diseases worldwide³, and both are associated with a high risk of death. They are also both major public health concerns, particularly in resource-limited settings. Patients undergoing hemodialysis are particularly vulnerable to these viral infections due to their compromised immune system, prolonged close contact with contaminated equipment and limited access to

resources for prevention and treatment. The aim of this paper is to discuss the prevalence of Hep C and Hep B in hemodialysis patients in resource-limited settings. Hepatitis B and C (HBV & HCV) are among the most prevalent causes of morbidity and mortality worldwide. As a result, patients on hemodialysis often become infected with these viruses. The high prevalence of HBV & HCV in hemodialysis patients found in resource-limited settings is of great concern, as these viruses can lead to severe liver disease^{5,6}, including cirrhosis and hepatocellular carcinoma.

MATERIALS AND METHODS:

Source of data:

Patients with chronic kidney disease on maintenance haemodialysis in ACSR government general hospital, Nellore from July 2022 to December 2022 were selected.

Study design:

Prospective study

Inclusion criteria:

Patients with the chronic kidney disease on maintenance haemodialysis in ACSR government general hospital, Nellore were included and screened for hepatitis B and hepatitis c virus

Exclusion Criteria:

Acute renal failure

Patients under the age of 14 years.

Study tools:

Data was collected in a structured performance, and all the relevant clinical and laboratory investigation details of the patients were collected. hbv virus screened using hbs ag rapid immunochromatography test and by using (CBNAAT) method hbv dna pcr analysis not detected means hbv dna pcr in non detectable range .hepatitis c virus screened by using hcv ab by using immnochromatography then hcv rna pcr done by using (CBNAAT) method . After entering data in Microsoft Excel and importing it into Statistical Package for the Social Sciences (SPSS) 20, analysis was performed. Frequency and percentage were used in descriptive analysis. Data were represented by using Tables.

RESULTS:

During the study period, a total of 100 cases were included with chronic kidney disease on maintenance haemodialysis . Of these 18 (18%) cases were females and the rest 82 (82%) were males and a maximum number of patients were in the age group of 40-80 years. Most cases of maintenance haemodialysis were between 1-2 yrs period of haemodialysis .hepatitis b ag detected by using rapid antigen method 7no,rapid negative but detected by PCR method 6 no,total number positive 13no,hepatitis c detected positive by rapid method 5,rapid method negative but PCR method positive are 4 total positive are 9.

Study Design:An observational clinical study

Table 1: Age in Years- frequency distribution of patients studied

Age in Years	No. of Patients	%
<40	10	10.0
40-50	38	38.0
51-60	34	34.0
>60	18	18.0
Total	100	100.0

Mean \pm SD: 51.48 \pm 10.16

Table 2: Gender-frequency distribution of patients studied

Gender	No. of Patients	%
Female	18	18.0
Male	82	82.0
Total	100	100.0

Table 3: Risk factor(dialysis duration) in years-frequency distribution of patients studied

Risk factor(dialysis duration) in years	No. of Patients (n=92)	%
0	11	11.9
1-2	61	66.4
3-4	19	20.7
>4	1	1.0
Hepatitis C Virus Rapid Test		
• Negative	93	93.0
• Positive	7	7.0
Hepatitis C PCR		
• Detected	6	6.0
• Not Detected	94	94.0
Total	100	100.0

Table 10:OTHER INVESTIGATIONS

Variables	No. of Patients	%
Hepatitis B Rapid Test		
• Negative	95	95.0
• Positive	5	5.0
Hepatitis B PCR		
• Not Detected	92	92.0

• Detected	8	8.0
Total	100	100.0

Discussion

The prevalence of viral hepatitis is greater in patients on hemodialysis than in the general population affecting quality of life and mortality. The results of this study showed that the prevalence of HBV and HCV infection was 9% and 13%, respectively in patients on hemodialysis. data from haemodialysis data ranges from 1.4% to 46% studies from india have reported variable prevalence rates from 24-28%^{7,8}.

The prevalence of HCV antibodies in patients from nephrology units is high and has been reported to range from 5 to 54%. HBV infection is less prevalent than HCV in hemodialysis units.

The rate of serum HBsAg sero positivity on maintenance hemodialysis in the developed world is currently low(0 to10%)but out breaks of acute HBV infection continue to occur in this setting.

The prevalence of HBV infection within dialysis units in developing countries appears higher(2to20%) based on several reports.

Studies carried out in various centers worldwide among dialysis patients have shown a prevalence of HCV as 8-36% in North America, 25-39% in SouthAmerica,1- 36% in Europe ,17 -51% in Asia,,2-10% in NewZealand and Australia, and 7-85% in South Africa.

The HBV prevalence rate varies from one dialysis unit to another. The prevalence rate in Europe is reported to be 23-43%,in USA 16-18%, in Tunisia 18%, in France 2.2%, in Russia 39-50%,and in South Africa 17%.

Generally, more than half of the infected patients on dialysis become persistent, symptomless hepatitis B surface antigen (HBsAg) carriers without biochemical evidence of hepatitis. In addition, the appearance of serological markers for HBV may be delayed by as long as 6-12months.

In India, reported prevalence of HBV and HCV infection among hemodialysis patient is variable. Reddy et al have reported that among patients on hemodialysis 5.9%were HCV positive while1.4%patients had HBV infection and 3.7% had co infection with HBV and HCV.

Current serologic testing for hepatitis C antibody utilizes a third generation ELISA test. With a sensitivity of approximately 97% these tests have been configured to optimize sensitivity, in order to protect the blood supply. Specificity remains an issue, and false positivity may be a problem. Hemodialysis patients, being immunosuppressed as a result of their renal impairment, may not mount an antibody response to hepatitis C virus with HCV infection and early studies have shown that ELISA anti HCV antibody negative dialysis patients may be HCV RNA positive. These early studies used first and second generation ELISA tests for anti HCV Ab with a lower sensitivity. Since then there have been studies showing good correlation between HCV RNA and anti HCV Ab in hemodialysis patients.

Currently, when using third generation ELISA sit is thought that, to use HCV RNA testing for routine screening is not Although we were unable to study the HBV vaccination/immunization status of our patient, the rate of HBV infection is low and of HCV infection (6.99%) is comparable with studies reported from other parts of the country necessary.

. It should be noted that the prevalence of the hepatitis virus in the country's general population is less than 1% suggesting several fold increase in risk of HCV infection in hemodialysis patients.

Since blood transfusion remains an important risk factor, screening of blood products for se in this population by Real Time PCR may be recommended.

CONCLUSION:

The prevalence of Hepatitis C and B among hemodialysis patients in resource-limited settings is significantly higher compared to the general population. This research paper highlights the urgent need for comprehensive strategies aimed at preventing, diagnosing, and managing these viral infections in such setups. Overcoming the challenges associated with limited resources is essential to ensure improved outcomes for hemodialysis patients and reduce the

burden on healthcare systems. Future research should focus on evaluating the effectiveness of intervention programs within resource-limited dialysis centers to further guide policy decisions and improve patient care. In conclusion, the prevalence of Hep C and Hep B in patients undergoing hemodialysis is higher in resource-limited settings due to a variety of risk factors. As a result, it is important that countries in these settings take steps to improve infection control and prevention measures to reduce the burden of these infections. If these steps are taken, it is likely that the prevalence of these infections will be reduced, thereby improving the quality of life of those affected. the prevalence of HBV & HCV in hemodialysis patients in resource-limited settings is of great concern, as these viruses can lead to severe liver diseases. Therefore, it is essential to institute proper infection control measures to reduce the risk of transmission. Moreover, comprehensive screening programs should be implemented to detect and treat infected individuals.

Bibliography

1. Meyers CM, Seef LB, Stehman-Breen CO, Hoofnagle JH. Hepatitis C and renal disease: an update. *Am J Kidney Dis.* 2003;42(4):631e657.
2. Fabrizi F, de Vecchi AF, Como G, Lunghi G, Martin P. De novo HCV infection among dialysis patients: a prospective study by HCV core antigen ELISA assay. *Aliment Pharmacol Ther.* 2005;21(7):861e869.
3. Gasiorowicz M, Hurie M, Russell A, Hoxie N, Vergeront J. Epidemiologic trends in infection, mortality, and transplants related to hepatitis C in Wisconsin. *WMJ.* 2006;105:34e39.
4. Alter HJ, Seeff LB. Recovery, persistence, and sequelae in hepatitis C virus infection: a perspective on long-term outcome. *Semin Liver Dis.* 2000;20:17e35.
5. Shepard CW, Simard EP, Finelli L, Fiore AE, Bell BP. Hepatitis B virus infection: epidemiology and vaccination. *Epidemiol Rev.* 2006;28:112e125.
6. Lok AS, McMahon BJ. Chronic hepatitis B. *Hepatology.* 2007;45:507e539.
7. Arankalle VA, Chadha MS, Jha J, Amrapurkar DN, Banerjee K. Prevalence of anti-HCV antibodies in western India. *Indian J Med Res.* 1995;101:91e93.
8. Gosavi MS, Shah SK, Shah SR, Pal RB, Saldanha JA, Banker DD. Prevalence of hepatitis C virus (HCV) infection in Mumbai. *Indian J Med Sci.* 1997;51:378e385.
9. Saha D, Agarwal SK. Hepatitis and HIV infection during haemodialysis. *J Indian Med Assoc.* 2001;99. 194e199, 203, 213.
10. Chandra M, Khaja MN, Hussain MM, et al. Prevalence of hepatitis B and hepatitis C viral infections in Indian patients with chronic renal failure. *Intervirology.* 2004;47:374e376.