FREQUENCY POSTIVITY OF HEPATITIS B VIRUS SURFACE ANTIGEN AND ANTI HEPATITS C VIRSUS ANTIBOIDES IN CHRONIC KIDNEY DISEASE PATIENTS ON DIALYSIS VISITING BACHA KHAN MEDICAL COMPLEX SWABI

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ABSTRACT

Objective: The objective of this study was to investigate the existence percentage of hepatitis B surface antigen and anti Hepatitis C virus antibodies in chronic kidney patients on dialysis.

Material & Method: This was a cross-sectional study. It was conducted at Pathology Department Bacha khan Medical Complex swabi. Duration of this was six months from January 2018 to June 2018. Two hundred and forty six (246) chronic renal failure (CRF) patients who were on regular dialysis were taken for this study. Their blood samples were taken for hepatitis B virus surface antigen (HBsAg) and anti hepatitis C virus antibodies (antiHCVAb) detection. The analysis was performed by enzyme linked immunosorbent assay (ELISA) method.

Results: In the results total 246 patients were enrolled in which 49(32.6%) male and 21(21.8%) were HBsAg positive and 23 (15.3%) male, 11 (11.4%) female were HCV positive.

Conclusion: HBV and Anti HCV antibodies presence has been detected in chronic kidney disease (CKD) patients on dialysis. Therefore strict control measures should be taken for the control of hepatotropic infection and transmission.

Key words: Chronic kidney disease, Enzyme linked immunosorbant assay, Hepatitis B virus, Hepatitis C virus, Dialysis

INTRODUCTION

The main function of kidney is to maintain and regulate the homeostasis of fluid and electrolytes balance and to remove the waste product. Chronic kidney disease (CKD) is a condition in which there is reduction in glomerular filtration rate for the period of three or more months or it defines the kidney damage. Untreated cases of CKD can leads to the end stage renal disease (ESRD) which is the last stage of kidney failure. ESRD causes the accumulation of waste materials which requires dialysis or transplantation.[1, 2] The factor of kidney failure may be primary or systemic.

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These ESRD and CKD patients need dialysis on short term, long term or on regular basis to maintain the optimal renal function. By the process of dialysis patient blood is removed, it is then purified through dialysis membrane and then transferred back to the patient. These dialyzed patients are more prone to acquire hepatotropic viruses by the use of uncleaned instruments and contaminated blood. Due to acquired hepatitis B or C infection in dialyzed patients there is more chances of morbidity and mortality.[3, 4]

The process of dialysis is routinely used for ESRD as a replacement therapy. Hepatitis B is a serious issue for public health globally. According to WHO 257 million people are infected with hepatitis B and more than 880 thousand died in 2015 due the late complication of this infection.HCV is transmitted mainly by contact with contaminated devices and tools despite of hygienic control. It is a major issue for public health in developed and non-developed countries both. Round about 80% acute hepatitis C cases progress to chronic hepatitis and almost 10-20% develops complications like cirrhosis and hepatocellular carcinoma. Hepatitis C virus is more common in patients on dialysis than in general people.[5, 6, 7]

The occurrence of hepatitis C virus is exceeding in patients of CKD on dialysis. One

report in USA it is up to 25% and in underdeveloped countries it is up to 50%. Patients on dialysis are more on risk to develop HBV and become chronic carriers as compared to no renal patients. HBV and HCV also causes various types of kidney damage like autoimmune disorder, Membranoproliferative Glomerulonephritis, focal segmental glomerulosclerosis, IgA nephrapathy, membranous nepropahy, vasculitis and lymphoproliferative disorders. Patient gets early ESRD who acquire HCV infection.[8,9] One treatment option for CKD patient is dialysis. Hemodialysis affects the patient innate immunity and causes changes in the phagocytic function of natural killer cells, neutrophils and monocytes. Therefore patients on dialysis are more susceptible to get HBV; HCV and HIV infection due their disturbance in immunity.[10] **The aim** of this study was to find out the frequency of HBV surface antigen and anti HCVantibodies positivity among the chronic kidney disease patients on dialysis.

MATERIAL AND METHOD

The study was conducted at pathology department Bacha khan medical complex swabi from January 2018 to June 2018 for the period of six months. Total 246 CRF patients on dialysis were enrolled in this study. The sample size was calculated by OpenEpi soft ware with 95% confidence interval and 5% margin of error. A 5ml blood from each patient was taken, centrifuged and serum was analyzed for HBV and HCV infection screening by ELISA kit purchased from biocheck. Positive results for HBV were defined by detection of HBs Ag and positivity for HCV was defined by detection of anti-HCV antibodies.

STATISTICAL ANALYSIS

Data was analyzed by using SPSS 20. The data was put in SPSS software for variable analysis. P ≤0.05 was considered significant. Data was presented as mean ± standard deviation of the mean (SD)

RESULTS

The results are described in the tables.

Table-1: **HBAg surface antigen positivity screening distribution Variable**

Gender	N	HBAg +	HBAg-
Male	150	49/150 (32.6%)	101 (67.3)
Female	96	21/96(21.8%)	75 (78.1)
Total	246	70/246 (28.4%)	176 (71.5)

P< 0.05

Table-2: anti HCV antibodies positivity screening distribution Variable

Gender	N	Anti HCV antibodies	Negative for anti HCV antibodies
Male	150	23/150 (15.3%)	127/150 (84.6)
Female	96	11/96 (11.4%)	85/96 (88.5)
Total	246	32/246 (13%)	214/246 (86.9)

P< 0.05

Table-3: Demographic profile and years of duration on dialysis

Variable (N= 246)	**Mean ± SD/%**
Age (year)	50.41 ± 16. 71
Age groups	
Up to 50 years	130 (52.8)
51y or above	116 (47.1)
Sex	
Male	150 (60.9)
Female	96 (39.02)
Hemodialysis duration (years)	6.80 ± 5.46
Hemodialysis duration groups	
< 5year	98 (39.8)
≥ 6 year	148 (60.1)
Hepatitis B	
Positive	70 (28.4)
Negative	176 (71.5)

Hepatitis C	
Positive	32 (13)
Negative	214 (86.9)

Table-4: Adjusted odd ratio association between dialysis duration and hepatitis B and C

Variable		Adjusted Odd ratio with 95% CI		p-value
Hepatitis B		Upper	Lower	
Dialysis duration 5y or more	1.91	3.30	1.12	0.01
Hepatitis C				
Dialysis duration 5y or more	2.32	3.65	1.29	0.001

DISCUSSION

Such type of study in which both types of variables like HBAg and anti HCV antibodies screening has not been conducted in the CKD patients on dialysis in our region. Therefore we take the initiative to investigate the burden of hepatotropic infection in patients on dialysis and take some baseline information for the assessment of infection control measures and their effectives for the population.

Alashek WA et;al 2012 and al-hijazat M et;al 2007, Ibrahim MRN et;al 2018 conducted studies in Saudia Arabia, Jordan and Dhouk respectively in which the prevalence of hepatitis B in renal dialysis patients was 4.6% , 5.9% and 3.2% respectively. Similar in our study we also found the positivity of HBV in dialysis patients which was 28.4%. [11, 12, 13]

The studies conducted in Iran, Turkey and Saudi Arabia the occurrence of hepatitis c virus was 4%, 29% and 20% respectively in patients on dialysis. Similar in our study there is also presence of HCV in dialysis patients which was 13.8%.[14, 15]

Guimaraes MNC et;al 2017 conducted a study on hepatitis B status in hemodialysis patients concluded that 130 male patients out of 181 on dialysis (63.8%) were HBV positive. In our study we also found that 49 out of 150 (32.6%) were positive for HBV.[16]

In the present study we took 246 CKD patients. Like our study in 2020 elahi W et;al conducted a study on hemodialysis patients in which they took 255 CRF patients.[17]

Limitations: In the present study confounding factors which could not be controlled like history of vaccination and lack of information about hepatitis B antibody status and C. Convenient sampling technique has been used for data collection which creates bias by many factors that cannot be controlled.

CONCLUSION

From the above discussion it has been concluded that HBV surface antigen and anti HCV antibodies has been founded in CKD patients on dialysis. Patients on dialysis can get infection through blood transfusion, contaminated instruments and dialysis machine.

This infection can further deteriorates the clinical features of the CKD patients, therefore strict measures should be taken for the control of virus transmission.

Conflict of interest: no conflict of interest

Recommendation: In this study we us ELISA method for screening of Hepatitis B and anti HCV antibodies. For more accuracy Polymerase chain reaction (PCR) is recommended for the confirmation of hepatitis B virus antigen and Anti HCV antibodies.

Public awareness, vaccination and screening before dialysis are needed to control the spread of viral infections.

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