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Research Article

**BURDEN OF HEPATITIS B AND HEPATITIS C VIRUS IN
HAEMODIALYSIS PATIENTS**Anees Muhammad¹, Muhammad Asif Zeb², Shaukat Ali¹, Aman Ullah¹, Inam Ullah¹,
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Paramedical Sciences, Khyber Medical University, Peshawar, Paksitan., ³Fata Secretariat,
Peshawar, Pakistan.**Abstract:**

Backgrounds: Hepatitis B and C viral infection is a common issue worldwide and can cause hepatocellular carcinoma, chronic liver disorders and liver cirrhosis. Patients on haemodialysis are at high risk for hepatitis B and C viral infection due to manifold transfusions, renal transplant and incessant use of dialysis material. Objective of the study is to determine the prevalence of hepatitis B and C in patients on haemodialysis.

Methods: This descriptive cross sectional study was conducted at the Institute of Kidney Diseases, Peshawar, Pakistan on kidney failure patients from January to May 2017. Two hundred and sixty two [262] patients were randomly selected and blood samples were taken before dialysis, screened for anti-HCV and hepatitis B surface antigen using ICT method, and all infected cases were confirmed by ELISA [generation 4]. Analysis of data was performed using SPSS version 22 software.

Results: In the present study 262 haemodialysis patients were screened for both HCV and HBsAg in which 151 [57.63%] were male and 111 [42.36%] were female patients. Mean age of the patient was 42.51 ± 14.69 years [15-67 years]. Out of total patients, 62 patients were infected with hepatitis B and C viral infection in which 47 [17.93%] were found positive for hepatitis C including 28 male and 19 female, whereas 15 [5.12%] were positive for hepatitis B including 7 male and 8 female. The highest prevalence was examined among 40-60 years [42.94%] of age group.

Conclusion: The current study reveals that patients of haemodialysis are more prone to hepatitis B and C infection. It is further known that vulnerability for HCV is more [17.93%] than HBsAg [5.12%] in such patients.

Key words: Haemodialysis, Hepatitis B, Hepatitis C, Prevalence

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INTRODUCTION:

Hepatitis B and C are blood borne infections frequently causing viral infections in developing countries in healthy general population and among the higher risk groups. Hepatitis B and C were discovered in 1963 and 1975 respectively [1]. Hepatitis C viral infection is the major worldwide cause of chronic liver diseases. Globally prevalence of hepatitis C infection is reported 3%. About 4 million people are infected with the disease per annually and approximately 180 million people are recognized as a carrier [2]. The investigated prevalence of HCV in Syria, Jordan and Saudi Arabia is 1%, 1.7% and 2.5% respectively [3]. Hepatitis B viral infection is also substantial global health crises which cause chronic liver disease [1, 4]. It is reported that roughly 350 million people have been infected with hepatitis B infection all over the world [5]. According to the WHO, prevalence of hepatitis B infection is approximately 2-5% in Indian subcontinent [Bangladesh, India and Pakistan] [6].

Study shows that around 10 million people in Pakistan are suffering from hepatitis C infection which covers about 6% of entire country's population. The epidemic of hepatitis C viral infection in Pakistan is due to famine of awareness about disease, medical education, proper medical facilities and technical and trained health care workers [2]. In Pakistan hepatitis B infection has low endemicity as compared to HCV [7]. and about 7-9 million people are infected from the disease with 3-5% as carriers [8].

The transmission of hepatitis B and C are almost indistinguishable and the common ways of spreading are unprotective sexual contact, transfusion of blood or their components, sharing of shaving instruments, tattoos instruments, therapeutic injection, organ transplantation, dental treatment and minor/major surgical equipment and also parenteral transmission [1].

Drug Addict, paid donor, multi-transfused haemodialysis, thalassemia and hemophilic patient are more prone to hepatitis B and C infection [2]. It is reported that globally 2.1 million patients required haemodialysis in 2012 and the figure is estimated to rise by 7% each year [9]. As compared to general population, haemodialysis patients are more exposed of acquiring the hepatitis B and C infection due to sharing of haemodialysis equipment, multiple blood or their products transfusion, reuse of dialyzer, repeated needle insertion and nosocomial contamination [10, 11].

The prevalence and incidence of hepatitis B and C viral infection in haemodialysis patients are different across different regions; depending upon infection control procedures and local endemicity. Hepatitis B prevalence in haemodialysis patients is 0.9%, 1.63%,

16.8 and 36% in US, Switzerland, Taiwan and Japan respectively. Study from India disclosed that prevalence of hepatitis B in haemodialysis dependent patient is 3.4% [3, 7]. A wide range [4.3%-45.2%] prevalence of hepatitis C was investigated from India in haemodialysis patients [11]. Study revealed that 12.4% patients undergoing haemodialysis were hepatitis B positive in Pakistan and vulnerability for infection increases when haemodialysis continued for more than two years [3]. Prevalence of HCV found in Pakistan is 28% in haemodialysis patients [12].

The aim of the current study is to investigate the prevalence of hepatitis B and C infection in haemodialysis patients in our setting.

MATERIALS AND METHODOLOGY:

This observational cross sectional study was carried out in duration of six months from January to June 2017 at the Institute of Kidney Disease [IKD] in Hayatabad Medical Complex [HMC], Peshawar, Pakistan. Total of 262 patients were screened for hepatitis B and C. All patients who receiving haemodialysis at IKD were included in the study irrespective of their age and gender. Moreover, patients having performed dialysis more than 20 times were also included in the present study, while those patients who were experiencing first sessions of haemodialysis and having chronic hepatitis B and C were excluded from the present study. Consent form was filled from patients/guardian after brief discussion about purpose, aims and procedure of research.

Five ml blood sample was collected from haemodialysis patients under aseptic conditions in gel tubes. The blood was allowed to clot at room temperature. Blood samples were centrifuged for 5 minutes at 1200 RPM and Serum were conveyed to segregate tube for analysis. Serum was screened both for anti-HCV and HBsAg by rapid immunochromatography technique [ICT]. Presence and absence of HCV antibodies were observed. While presence and absence of HBs Antigen were noted. SD diagnostic kits was used for both Ab-HCV and HBs-Ag qualitative detection. Prior to used test samples and kit were brought to room temperature. Two

Positive cases were confirmed through ELISA [Generation 4]. All data were entered into Microsoft Excel for further analysis through Statistical Package for Social Sciences [SPSS 22]. P-value less than 0.05 as considered significant.

Test kit and samples were brought to room temperature prior to use. Test strip was held only at the upper end which has an arrow pointing downwards. Container was immediately closed after removal of test. Test strip immersed with the arrow

pointing downwards into a tube with 0.25 to 0.5 ml sample. The sample was not touching the cover foil of test. The test was not removed until the chromatographic process was complete. The results were read within 20-30 minutes after immersion into the sample at a well lit place.

RESULTS:

In the present study, a sample of blood was collected together from 262 haemodialysis patients, including 151 male [57.63%] and 111 females [52.36%]. Mean age was 42.51 ± 14.69 of all patients ranged from 15-67 years. Mean age was 39.91 ± 14.24 years of male patients, whereas female patients mean age was 41.66 ± 9.42 years. Out of the total blood sample examined, 62 were found positive for HCV and HBsAg. However, the ratio of HCV infection was

more [17.93%], 47 patients were infected from the disease including 28 male [59.57%] and 19 females [40.42%].

The prevalence of HBsAg was comparatively low [5.72%], only 15 patients were positive including 7 male [46.66%] and 8 females [53.33%] While 15 [5.72%] patients of 262 haemodialysis patients were hepatitis B positive, 8 were female [53.33%] and 7 were male [46.66%].

The prevalence of HCV and HBsAg was more in female patients [24.32%] as compared to male [23.17%]. However, the results were different from individual infection, i.e. infection rate of HCV was more in male patients [18.54%] than female [17.11%]. On the other hand HBsAG prevalence was more in female patients [7.21%] than male [4.63%].

Table No. 1: Prevalence of Hepatitis B and C infection in haemodialysis patients.

Type of infection	Infected cases	Total Positive	Total Negative	Total patients	Prevalence
HBsAg	15 [24.19%]	62	200	262	5.72%
HCV	47 [75.81%]	62	200	262	17.93%

Table No. 2: Hepatitis B and C patients' distribution according to Gender.

Gender	HBsAg Infected	HCV Infected	Total Infected patients	Percentage
Male	7	28	35	[56.45%]
Female	8	19	27	[43.55%]
Grand Total	15	47	62	100%

Table No. 3: Distribution of Hepatitis B and C patients according to Age.

Age [Years]	HBsAg	HCV	No. of Infected patients	Percentage
0 – 20	03	04	07	[11.29%]
20 – 40	05	17	22	[35.48%]
40-60	07	19	26	[41.94%]
60 & above	00	07	07	[11.29%]
Total	15	47	62	100%

The prevalence of Hepatitis B and C was high among 40-60 years [41.94%] age followed by 40-60 years [35.48%] of age while the lowest were same in between 0-20 years and 60-above years [11.29%] was monitor.

DISCUSSION:

It was discerned that the prevalence of hepatitis C infection is 17.93% in our setting [Peshawar] which is less in contrast to other regions in Pakistan. The percentage of HCV was 68% found at Sheikh Zayed Postgraduate Medical Institute, Lahore [13]. However, 24.7% HCV cases were found in another study at Lahore [14]. Prevalence of HBsAg is comparatively higher in other studies carried out at Karachi [28.7%] and Islamabad [12.4%] [15]. Comparing the results of present study with that of international research studies reveals that prevalence is too high in our setting.

Discrepancy in prevalence of HCV and HBsAg of the present study to that of other studies in the Pakistan in the aforementioned paras may be due reasons such as overburden of population in haemodialysis patients, all the dialysis centers do not have facilities for dialyzing of HCV and HBsAg positive patients and thus patients rush towards the center with well equipped facilities.

It was concealed that whether these patients were HCV or HBsAg positive before the beginning of the haemodialysis or became positive during the haemodialysis process. Generally, the probability of hepatitis B or C or both are raised, when number and duration of dialysis are increased [7]. It has also been noted that the risk of hepatitis B or C or both are elevated with the number of transfusion. The hazard of HCV and HBsAg dissemination through transfusion of blood is high in our community due to non-availability of appropriate facilities for screening of blood [2]. Hepatitis B and C infection relationship with renal replacement therapy like transplant has been disclosed in different studies [7]. Frequently use of dialysis machine or instruments is also having alliance with the positivity of hepatitis C and hepatitis B virus infection [2].

The prevalence of HCV was elevated among the male and old age group as compared to female and young age group people and may be due to high exposure to a variety of risk factors [2]. Hospital transmission of HCV and HBsAg with infected instruments and patients to patients' exposures is also a risk factor [14]. In order to reduce the risk of infection, precautionary measures need to be adopted. Blood banks are required to be well equipped for accurate screening of blood for

HCV and HBsAg. Special care need to be taken at hospital level during handling of patients.

Availability of isolate dialysis machine and units will further help to minimize the risk of infection. Before the dialysis process, timely screening of patients for infection is significant.

CONCLUSION:

Present study exhibits that haemodialysis patients are additionally at risk to hepatitis B and C viral infection. It is further known that vulnerability to HCV [17.93%] infection is more than HBsAg [5.72%] in such patients. Although the infection ratio is comparatively low in our setting than the rest of the region inside the Pakistan but the ratio is higher than developed countries and thus awareness masses may be created for the adoption of precautionary measures to reduce the occurrence of the infection.

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