



## Frequency of HBsAg and Anti-HCV among Hemodialysis Patients in Three General Hospitals of Azad Kashmir

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### Significance:

Our findings revealed ongoing HCV incidence and high HCV/HBV prevalence among HD patients in Azad Kashmir. But incidence and prevalence appear to be declining year by year. About one-fifth of HD patients are chronic carriers of HCV infection, in need of HCV treatment, and potentially can transmit the infection to other HD patients. In context of rapidly growing HD patient population, these findings highlight the need to improve standards of infection control during dialysis in Azad Kashmir.

### ABSTRACT

**Background:** The impact of dialysis modality on the rates and types of infectious complications has not been well studied. The aim of the present investigation was to evaluate the rates of hepatitis C virus and hepatitis B virus infections in hemodialysis patients in three general hospitals of Azad Kashmir. In dialysis patient, if left unaddressed these may lead to very fatal consequences at the individual and national level. Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections represent significant public health issues globally. These infections are important causes of morbidity and mortality in hemodialysis patients. Patients with HBV/HCV co-infection have a higher risk of progression to cirrhosis and decompensated liver disease and have an increased risk of hepatocellular cancer (HCC). Because the two hepatotropic viruses share same modes of transmission, co-infection with the two viruses is not uncommon, especially in areas with a high prevalence of HCV infection and among people at high-risk for parenteral infection.

**Objective:** The present work was aimed to determine the frequency of hepatitis B and C among dialysis patients in Azad Kashmir dialysis centers.

**Design:** Cross-sectional descriptive study.

**Settings:** Pathology laboratory of Abbas Institute of Medical Sciences, Muzaffarabad, Azad Jammu & Kashmir.

**Participants:** A representative sample of 110 patients of dialysis from all Azad Kashmir dialysis centers including both males and females was studied between August and December 2016. BMI was calculated after measuring weight and height followed by measurement of hepatitis B and C in dialysis patients.

**Results:** In this study, out of 110 patients: 52.72% dialysis patients were hepatitis C positive and 13.63% dialysis patients were hepatitis B positive.

**Conclusion:** Our findings revealed ongoing HCV incidence and high HCV/HBV prevalence among HD patients in Azad Kashmir. But incidence and prevalence appear to be declining year by year. About one-fifth of HD patients are chronic carriers of HCV infection, in need of HCV treatment, and potentially can transmit the infection to other HD patients. In context of rapidly growing HD patient population, these findings highlight the need to improve standards of infection control during dialysis in Azad Kashmir.

### Introduction

Hepatitis B (HBV) and hepatitis C (HCV) virus infections are important causes of morbidity and mortality in hemodialysis patients and raise problems in treating these patients in the kidney dialysis units. (1) An estimated 400 million people are carriers of HBV worldwide. 75% of them live in Asia and the western Pacific. HCV infection is estimated at approximately 170 million people worldwide. Reported prevalence and incidence of HCV infection in hemodialysis patients varies from country to country, ranging from 1 to 84.6%. (2)

Hepatitis B Virus (HBV) can be detected in blood and derivatives as well as in saliva, semen, vaginal secretion and exudates from cutaneous ulcer. HBV contamination is mainly established during the first year of life in highly endemic areas (Asia, Africa and East Amazonia), while in low epidemic areas the most important infection is found among young adults belonging to risk groups (health workers, hemodialysis patients, hemophiliacs, homosexuals, prostitutes, drug abusers, Hansen's disease patients, immunosuppressed patients and contacts with HBV infected patients). (3) The risk of infection in patients with chronic hemodialysis (HD) due to the process of Huntington's disease is high. Monitoring for HD-related infections has traditionally focused on viral hepatitis. The morbidity and mortality of these infections in the dialysis population is difficult to quantify. (4)

The wide access to dialysis increased life of a patient with chronic kidney insufficiency specific improvement. During hemodialysis, the patient's blood flows through a filter in a dialysis machine. Although this method of treating renal failure is efficient but it

can also lead to the transmission of multiple blood-borne infections such as HBV, HCV, and HIV. The prevalence of HBV and HCV in hemodialysis patients varies greatly in different countries and even in different centers of the same place. (5)

The prevalence of HCV infection in hemodialysis patients differs from 4% to over 70% in some countries (5). The major reasons for this are the high prevalence of infections in the general population, a lack of standard methods of prevention and effective vaccination, inadequate disinfection of dialysis machines and other medical equipment, as well as the spread of infection from one patient to another, especially in dialysis centers. (5-6) HBV infection is less common in hemodialysis than HCV infection. The advent of HBV vaccine, the isolation of HBV-positive patients, the use of specialized dialysis equipment and the regular monitoring of HBV infection have dramatically reduced the prevalence of HBV in this environment. There are few studies on the prevalence of dual infections among hemodialysis patients from this region. Therefore, the present study estimates the prevalence of HBV and HCV co-infections in hemodialysis patients. (6)

Prolonged vascular exposure and multiple blood transfusions increase the risk of acquiring these blood-borne infections in hemodialysis patients. Contaminated devices, equipment and supplies, environmental surfaces, and attending personnel may also play a crucial role in the nosocomial transmission of these infections. Infections with hepatitis viruses in hemodialysis patients are further promoted by the significant immune status dysfunction developing due to irreversible renal compromise. (7-8)

In Hemodialysis, fluid is pumped for a time into the peritoneal cavity which is space around the gut. This cavity is lined by peritoneum. Peritoneum cavity contains blood vessels. When we place dialysis fluid in peritoneal cavity, waste material from peritoneal blood vessels diffuse into dialysis fluid, which is then drain out. This type of dialysis can be performed at home but must be done every day. In hemodialysis, patient blood is pumped through an apparatus called dialyzer. Dialyzer contains long tube, the wall of which acts as semi-permeable membrane. Blood flow through the tube while the dialysis fluid flows around the tubes. Extra water and wastes move from blood into the dialysis fluid. The cleansed blood is then returned to body. The hemodialysis treatments are typically given in dialysis centers up to three times per weeks. (7)

HBV infection is less common in hemodialysis than HCV infection. The advent of HBV vaccine, the

isolation of HBV-positive patients, the use of specialized dialysis equipment and the regular monitoring of HBV infection had reduced the prevalence of HBV in this environment. (8)

There are very few studies on the prevalence of such dual infections among hemodialysis patients from this region. Therefore, the present study was conducted to estimate the prevalence of HBV and HCV co-infections in hemodialysis patients. (9-10)

### Materials and Methods

The blood samples were collected by venous puncture with the help of 5 ml sterile syringe into plain test tube without any anticoagulant. These tubes were left at room temperature for 15 minutes and then centrifuge at 4000 rpm for five minutes for serum separation.

Three drops of separated serum (20  $\mu$ l) were taken by the dropper provided in the kit and placed in device. Device was left at the room temperature for 12 minutes. The sample showing two bands against control and T were considered positive for the hepatitis B surface antigen. For HCV screening, a drop of serum was placed in the sample space in the kit device and three drops of buffer, provided with the kit, were added to it. Device showing two bands against both 'C' and 'T' were considered positive for anti HCV antibody.

Screening kits (ICT: ACON®, ACON laboratories Inc., San Diego, CA 92121, USA) were used. These kits are based on immunochromatographic test technique (ICT). ICT method is a quick diagnostic method for the detection of antibodies against different pathogenic diseases in the blood of dialysis patient. It is based on chromatographic hybridization of antigen and antibody. The HCV screening device is coated with the antibody of HCV while HBV screening device harbors antibody against the surface antigen of HBV (HBsAg). When the serum contacting the HCV antibody or HBsAg is loaded in the device it produces a color reaction at a specific spot on the screening device.

### Results

A total 110 individuals were investigated for the prevalence of hepatitis B & C among dialysis patients visiting three hospitals in Muzaffarabad, Azad Kashmir. Mean age of the participants were  $55 \pm 21.4$  years. Both males and females were included in the study who belonged to different areas of Azad Kashmir. Out of 110, 68% were male and 32% were females.

**Frequency of hepatitis B among dialysis patients:** In the present study, 110 patients were screened for

surface antigen of HBV. After the analysis of the data, hepatitis B was found in the 13.63% of the total patients.

**Hepatitis C frequency in dialysis patient:** Hepatitis C was found positive in the 52% of the participants.

**Table1: Frequency of HBsAg and Anti-HCV among study population**

Infection Screening	Frequency (N/110)	Rate (%)
HBsAg	15	13.63%
Positive	58	52.72%
Anti-HCV		

### Discussion

Present study describes the prevalence of viral hepatitis B and C infection among the patients visiting in three general hospitals of Azad Kashmir. Among the study patient 13.36% were found HBV infected and 52.72% had antibodies against the hepatitis C. In this study population, HCV was found more prevalent among the patients visiting the general dialysis centers in Azad Kashmir. Regarding the gender distribution of HBV and HCV infection, these were more prevalent in male patient then females.

The HBV & HCV infection found more in males as compared to female may be due to their increase exposure outside of their homes, visiting barber shops. Another risk may be blood transfusion. Transfusion is common in dialysis patients and/or use of infected instruments during dialysis. Lack of standard practices in sterilization and infection control in remote areas is found and reported many times so it may lead to increased rate of transmission of infections.

### Conclusion

Our findings revealed ongoing HCV incidence and high HCV/HBV prevalence among hemodialysis patients in Muzaffarabad, Azad Kashmir. But incidence and prevalence appear to be declining year by year. About one-fifth of HD patients are chronic carriers of HCV infection, in need of HCV treatment, and potentially can transmit the infection to other HD patients. In context of rapidly growing HD patient population, these findings highlight the need to

improve standards of infection control in dialysis in Azad Kashmir.

**Conflict of Interest:** This study has no conflict of interest to declare by any author.

**Disclosure:** None

**Human and Animal Rights:** No rights violated

### References

- Malhotra R, Sooin D, Grover P, Galhotra S, Khutan H, Kaur N. Hepatitis B virus and hepatitis C virus co-infection in hemodialysis patients: A retrospective study from a tertiary care hospital of North India. *Journal of natural science, biology, and medicine*. 2016 Jan;7(1):72.
- Desikan P, Khan Z. Prevalence of hepatitis B and hepatitis C virus co-infection in India: A systematic review and meta-analysis. *Indian journal of medical microbiology*. 2017 Jul 1;35(3):332.
- Carrilho FJ, Moraes CR, Pinho JR, Mello IM, Bertolini DA, Lemos MF, Moreira RC, Bassit LC, Cardoso RA, Ribeiro-dos-Santos G, Da Silva LC. Hepatitis B virus infection in Haemodialysis Centres from Santa Catarina State, Southern Brazil. Predictive risk factors for infection and molecular epidemiology. *BMC Public Health*. 2004 Dec;4(1):13.
- Kalantari H, Ferdowsi F, Yaran M. Prevalence of occult hepatitis B virus infection in hemodialysis patients in Isfahan, Iran. *Advanced biomedical research*. 2016;5.
- Thongsawat S, Maneekarn N, Kuniholm MH, Pantip C, Thungsupti A, Lumlertkul D, et al. Occult hepatitis C virus infection during an outbreak in a hemodialysis unit in Thailand. *J Med Virol*. 2008;80(5):808–15. doi: 10.1002/jmv.21126
- Roushan MR, Farokhtabar S, Bayani M, Siadati S. Epidemiological aspects of hepatitis B and C and human immunodeficiency viruses among hemodialysis patients in Mazandaran Province, Iran. *Nephrology monthly*. 2016 May;8(3).
- Malhotra R, Sooin D, Grover P, Galhotra S, Khutan H, Kaur N. Hepatitis B virus and hepatitis C virus co-infection in hemodialysis patients: A retrospective study from a tertiary care hospital of North India. *Journal of natural science, biology, and medicine*. 2016;7(1):72-4.
- Bahri F, Kheirabad AK, Ghasemzadeh I, Shoja S, Gouklani H. Hepatitis Viruses B and D and Human Immunodeficiency Virus infections in hemodialysis patients in the south of Iran: prevalence and genotypes. *Hepatitis monthly*. 2016 Jan;16(1).
- Minutolo R, Aghemo A, Chirianni A, Fabrizi F, Gesualdo L, Giannini EG, Maggi P, Montinaro V, Paoletti E, Persico M, Perticone F. Management of hepatitis C virus infection in patients with chronic kidney disease: position statement of the joint committee of Italian association for the study of the liver (AISF), Italian society of internal medicine (SIMI), Italian society of infectious and tropical disease (SIMIT) and Italian society of nephrology (SIN). *Internal and emergency medicine*. 2018 Dec 1;13(8):1139-66.
- Anwar K, Imran M, Shahzad F, Noreen M, Atif M. Prevalence of Hepatitis B and Hepatitis C Infection among Patients Undergoing Dialysis. *Journal of Human Virology and Retrovirology*. 2016;3(3).