

Prevalence of Hepatitis B Infection Among Kidney Patient Attending for Haemodialysis in Gazi Medical College Centre, Khulna, Bangladesh

Abdullah-Al-Faroque^{1*}, M M Abdus Shamim², Md Abdul Latif Khan³,
Pritwy Shankar Biswas⁴, Md. Amirul Islam⁵, Mukta Parveen⁶

¹MBBS, DCP (BSMMU), Assistant Professor, Department of Pathology, Gazi Medical College, Khulna, Bangladesh.

²MBBS, MD (Cardiology), Assistant Professor of Cardiology, Gazi Medical College, Khulna, Bangladesh.

³MBBS, M Phil (Pharmacology), Professor of Pharmacology, Gazi Medical College, Khulna, Bangladesh.

⁴MBBS, M Phil (Biochemistry), Assistant Professor of Biochemistry, Gazi Medical College, Khulna, Bangladesh.

⁵MBBS, DHC, MPH, Assistant Professor, Department of Paediatrics, Gazi Medical College, Khulna, Bangladesh.

⁶MBBS, M Phil (Biochemistry), Assistant Professor of Biochemistry, Gazi Medical College, Khulna, Bangladesh.

ABSTRACT

Kidney disease is increasing day by day in the form of AKD or CKD. CKD patients who have developing end stage renal disease (ESRD) required haemodialysis for survival. There is a potential risk of increasing blood borne viral infection particularly Hepatitis B infection. The proportion of hepatitis B infection increasing with increased frequency of dialysis. The risk is 1.47 times more in the patients receiving haemodialysis. We have a retrospective study. The study times was January 2017 to December 2017 all the patients attending haemodialysis unit at Gazi Medical College. A total 236 patients were selected. Among them 151 patients were vaccinated and 67 patients vaccinated during dialysis and 18 patients were not vaccinated. There was a history of blood transfusion of 145 patients and 91 patients have no history of blood transfusion. There were 30 patients were HbsAg positive out of 236 patients. 12 patients were vaccinated before the diagnosis of CKD and 18 were not vaccinated. The finding of the study will help the doctor and policy maker to take appropriate measurement to decrease the morbidity and

mortality from Hep B infection who are receiving haemodialysis.

Keywords: Prevalence, Hepatitis B, Haemodialysis, End Stage Renal Disease.

*Correspondence to:

Dr. Abdullah-Al-Faroque,
MBBS, DCP (BSMMU),
Assistant Professor,
Department of Pathology,
Gazi Medical College, Khulna, Bangladesh.

Article History:

Received: 22-12-2018, Revised: 16-01-2019, Accepted: 30-01-2019

Access this article online

Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2019.5.1.065	

INTRODUCTION

Kidney disease is defined as heterogeneous group of disorder affecting kidney structure and function. Mild abnormalities in kidney structure and function increase risk for complication in other organ system to renal failure to death. Duration greater than 3 month is chronic and less than 3 month defined as acute. There is complex relationship between CKD and AKI. CKD leads to AKI and AKI Patients have high risk for developing CKD.¹ CKD patients are high risk for developing end stage renal disease (ESRD) - condition requiring dialysis or kidney transplantation to maintain patient long term survival. It cost between US \$70 to 75\$ billion worldwide excluding kidney transplantation. The predicted number of ESRD patients is estimated over 2 million.² Nation kidney foundation developed a practice guideline for CKD – glomerular filtration rate (GFR) below 60 ml/min/1.73 m² for more

than 3 or more month with or without evidence of kidney damage, irrespective of the cause.^{3,4}

Hepatitis is a global health problem. There are approximately 400 million hepatitis B virus (HBV) carriers in the world and over 500000 die annually from HBV-associated liver disease.⁵

Haemodialysis is a trusted intermediate procedure for management of chronic kidney (CKD) patients. CKD is an immune deficient state and blood borne viral infection particularly HBV important for patients mortality and morbidity treated by hemodialysis.⁶ Blood transfusion increases the risk of HBV infection and haemodialysis with long term more likely to be infected than short term.⁷ The risk for a patient to become HBV positive increase 1.47 times who receiving 1 month of hemodialysis.⁸ Patients on haemodialysis may be infected through

blood transfusion, contamination of dialysis machines and equipments as well as interpersonal horizontal transmission.⁹ The prevalence of HBV in haemodialysis patients in case of CKD patients in Bangladesh unknown. So the aim of the study to 1) Assess the prevalence of HBV among haemodialysis patients at Gazi Medical College, 2) Evaluation the mode of transmission of HBV among haemodialysis patients, and 3) Development prevention strategies.

MATERIALS AND METHODS

This is a retrospective single centre study. The study was conducted at dialysis unit of Gazi Medical College Hospital. This is first and one of the important dialysis centre in Khulna city. The dialysis unit consists of 7 bed and daily average 22 patient getting dialysis from this centre. As this is the first and renowned dialysis centre the study will reflect the status of HBV among haemodialysis patient of this city. The study was conducted for a period of 12 months from Jan 2017 to Dec 2017. All the patients

visited dialysis unit in this period were included in this study. A study protocol was designed and approved by the ethical committee of the institution. Then ID on of kidney patient who getting haemodialysis were collected from our laboratory register and data were reproduced from our computerized central database.

Before dialysis every patient need dialysis screening. The screening tests are HBsAg, Anti HCV, Anti HIV, and TPHA. Those patients getting dialysis usually doing their test from our laboratory. Most of the patients are anaemic due to usual consequence of kidney disease. And most of the anaemic patient prefers blood transfusion rather than haematinics like erythropoietin because of their high cost.

In this study we include those kidney patients who were regularly getting dialysis and incidentally became positive on screening and confirmatory test. Those data were tabulated and analyzed. Those positive patients subsequently choose positive dialysis centre for their dialysis.

Fig 1: Age group of study population.

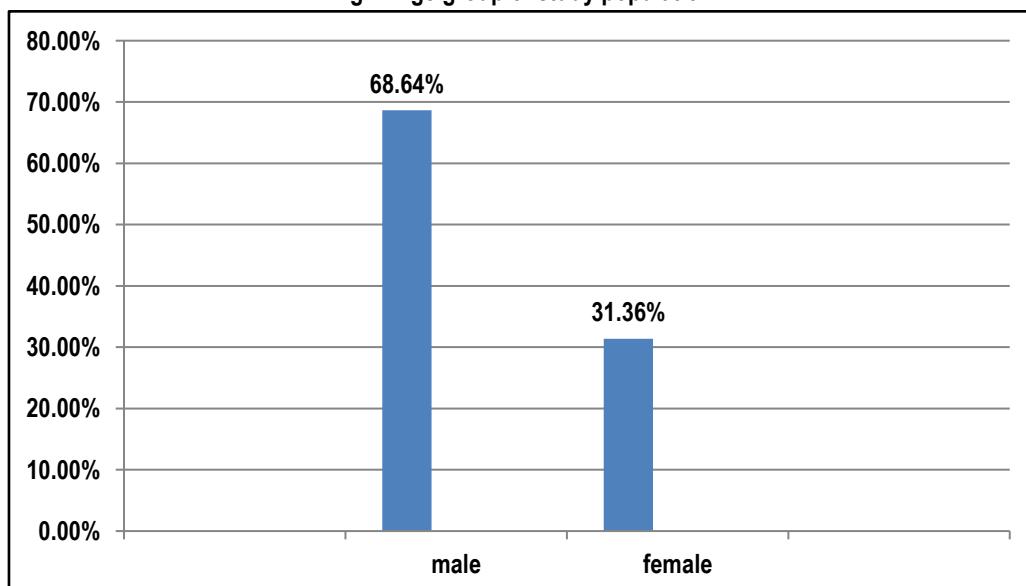


Fig 2: Prevalence rate of HBV among study population.

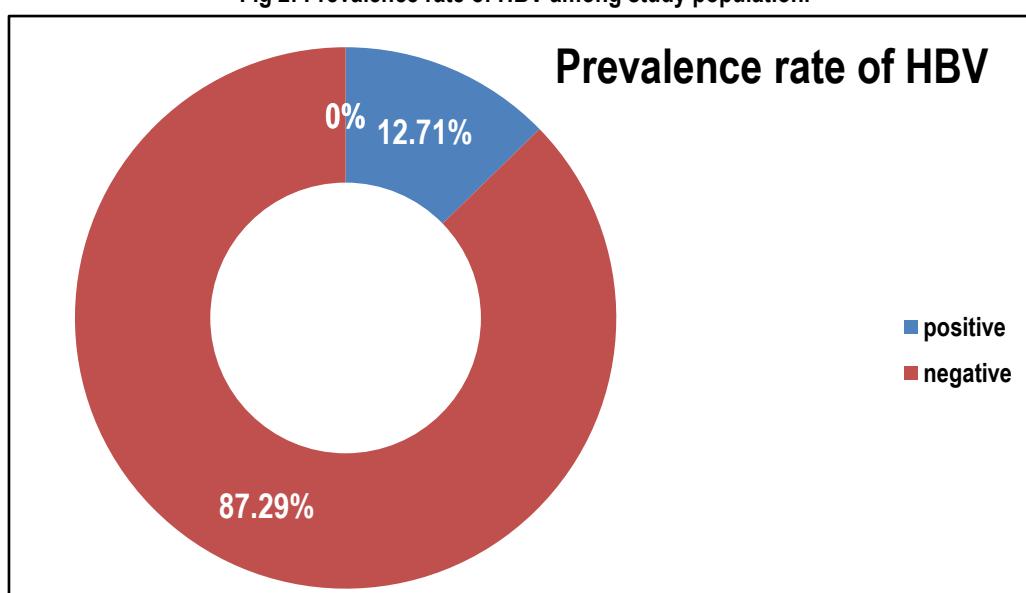


Table 1: Status of vaccination

Total number of patients	Vaccinated before dialysis	Vaccinated during dialysis	Not vaccinated
236	151	67	18

Table 2: Status of blood transfusion

History of blood transfusion	No history of blood transfusion
145(61.45%)	91(38.55%)

RESULTS

All patients' data attending dialysis unit of Gazi Medical college hospital during the period of January 2017 to December 2017 evaluated and analyzed. Total 236 patients selected randomly from those above period. Out of this 162(68.64%) were male and 74(31.36%) were female. Most of the patients were between 40 and 60 years of age and mean age was 45.41 years. History of blood transfusion, duration of haemodialysis and other variable were noted.

From the base line study it was found that 30 patients were HBsAg positive out of 236 at the beginning of the haemodialysis. So the prevalence rate was 12.71%. They were referred to another centre for dialysis.

Total 151 patients out of 236 were vaccinated against HBV before commencing haemodialysis, 67 patients were vaccinated during the time of haemodialysis and 18 patients were not yet vaccinated against HBV at the time of study.

Another interesting finding is that total 145 (61.44%) patient receiving blood transfusions before or during the time of haemodialysis.

Out of total 30 newly positive HBV infected patient no one was vaccinated before the diagnosis of CKD. 12 patients were vaccinated just before haemodialysis and 18 were not yet vaccinated.

DISCUSSION

The rate of ESRD (end stage renal disease) is increasing with proportional rise the rate of dialysis. This dialysis procedure also disseminated the blood borne viral infection especially hepatitis B virus infection that may vary from centre to centre, region to region, country to country and high cost dialysis centre to low cost dialysis centre.¹⁰ Prevalence of HBV infection among dialysis patients in developed countries are reported 6.2%.¹¹ In Bangladesh approximately 14% of all patients on maintenance haemodialysis (MHD) were serologically positive for hepatitis B infection from a report of 1986-96.¹² In the present study there is also increased the ratio of hepatitis B infection among the patients receiving haemodialysis. About 68.64% patients were male and 31.36% patients were female who diagnosed hepatitis B positive during MHD. About 12.71% patients were hepatitis B positive before starting dialysis. All the patients had a common history of receiving blood transfusion. Some patients were vaccinated before dialysis and some during dialysis. 7.63% patients were not vaccinated. There were some other studies also showed that increased rate of hepatitis B infection during dialysis.

Rumi et al. 1998 showed that HBsAg positive in haemodialysis patients' frequency 1.6%.¹³ The registry reports from seven Asia-Pacific countries showed prevalence of HBV during 2001-2005 ranged 1.3% to 14.6%.¹⁴

In our study there is increasing the transmission of hepatitis B infection in CKD patients through dialysis. The major route of transmission is blood borne infection. The patients who were receive blood transfusion they are at risk of infection. Probably blood screening procedure need to be more sophisticated. Blood screening method in blood bank may adopt the newer technique like PCR, ID-NAT etc.¹⁵ If it is possible use PCR or nucleic acid testing method for detecting hepatitis B virus before every transfusion. Then the vaccination against hepatitis B before staring dialysis and voluntary blood donation may help to reduce the blood borne infection.

CONCLUSION

Dialysis is a lifesaving process for the end stage renal disease patients. So the both blood screening and dialysis procedure should be safer for the patients that may reduce both the mortality and morbidity. If there is available opportunity then those are infected we can use separate dialysis machine that also may prevent to dissemination of blood borne infection to other patients who are receiving dialysis through same machine. With more improving screening method the rate of hepatitis B in end stage renal disease patients may be remit.

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Source of Support: Nil.

Conflict of Interest: None Declared.

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Cite this article as: Abdullah-Al-Faroque, M M Abdus Shamim, Md Abdul Latif Khan, Pritwy Shankar Biswas, Md. Amirul Islam, Mukta Parveen. Prevalence of Hepatitis B Infection Among Kidney Patient Attending for Haemodialysis in Gazi Medical College Centre, Khulna, Bangladesh. Int J Med Res Prof. 2019 Jan; 5(1):293-96. DOI:10.21276/ijmrp.2019.5.1.065