Frequency of Hepatitis B and C in Chronic Patients of Chronic Renal Failure

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ABSTRACT

Background: Dialysis is an invasive medical procedure required to filter blood of waste products in patients of renal failure. In this procedure there is direct contact of blood with filtration processes and can results in high risk of infection especially HBV and HCV.
Objective: To study the frequency of Hepatitis B and C Infection in dialysis patients of chronic renal failure.
Materials & Methods: This descriptive study was conducted in Dialysis Deptt of District Head Quarter Hospital Bannu KPK Pakistan. The duration of study was four years from January, 2014 to December,2017.A total of 165 dialysis patients of chronic renal failure were analysed. Inclusion criteria was all dialysis patients of chronic renal failure of any age and sex with more than 10 dialysis received. Exclusion criteria was newly diagnosed dialysis patients. All the patients screening were performed for hepatitis B and C virus by Immunochromatographic technique (ICT). Positive cases were confirmed by Enzyme Linked Immuno Assay (ELISA) and Polymerase Chain Reaction (PCR) subsequently.
Results: The age range was 10 60 years. Male were 98 (59.40%) and female were 67 (40.60%) with male to female ratio of 1.56:1. The most common age group was 40-50 64 (38.78%) followed by 30-40 48 (29.09%). Out of these 165 dialysis patients 11 (6.66%) were positive for hepatitis B virus, 09 (5.45%) were positive for hepatitis C virus and 02 (1.21%) were positive for both B & C viruses.
Conclusion: In this study there is high frequency of HBV and HCV infections in patients with CRF on dialysis, the reason is likely improper screening of blood for transfusion as well cross infection of patients from dialysis machines
Key words: *Dialysis patients. Chronic Renal Failure. Blood transfusion. Hepatitis B and C infections.*

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INTRODUCTION

There are different hepato tropic viruses causing hepatitis like hepatitis A, B, C , D, E, F and G viruses. Among these hepatitis B and C viruses are clinically very important.[1,2] The risk factors for transmission of Hepatitis B and C Virus are many like infected syringes, minor cuts and breaks in skin or mucous membrane, unprotected homosexuals and heterosexuals, surgical and dental procedures, needle stick injuries, barber shops, unknown and transfusion and dialysis related infection in developing countries espacially.[3-5] Hepatitis B and C infections is a major global health problem affecting about 240 million and 150 million of population respectively world wide. These viruses can be easily detected in blood and present in low concentration in vaginal secretion, semen, saliva and tears. These viruses are not detectable in sweat, urine and stool.[6,7] These viruses may causes cirrhosis, hepatoma or liver failure as their subsequent complication. CRF patients on dialysis are at Increased risk of developing HBV and HCV infection either from transfused blood or from infected dialysis machines in due course of their dialysis.[8] Immunization is the protective mechanism against these infection and upto now recombinant vaccine against HBV is availabe since 1980 but uptill now no vaccine is available for HCV.[9] Education is another way to protect high risk health worker to reduce the risk of transmission to other individuals, intensification and rectification of screening methods of blood products are highly needed at this time. Also dialysis equipments proper disinfection and sterilization is very much needed today form minimization of the infections.[10]

It is essential to think about development of disposable dialysis machine, so that chances of mechanical transmission of these infections may be minimized.[11]

The aim of this study was to see the frequency of hepatitis B and C infections in patients of dialysis of chronic renal failure in our region of KPK Pakistan.

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MATERIALS AND METHODS

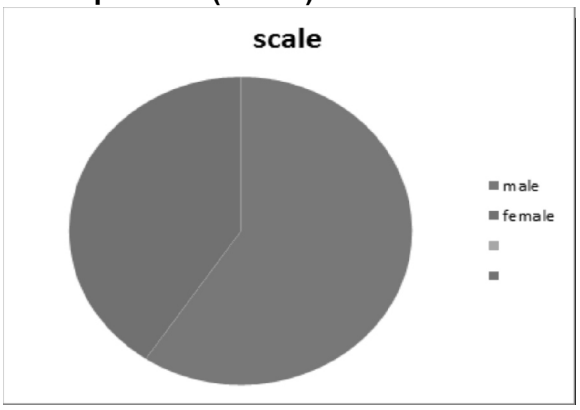
This descriptive study was conducted in dialysis unit of Disrict Head Quarter Hospital Bannu KPK. Pakistan. The duration of this study was four years (January, 2014-December, 2017.) A total of 165 cases of chronic renal failure on dialysis were studied. Inclusion criteria was all dialysis patients of chronic renal failure of any age and sex. Exclusion criteria was newly diagnosed dialysis patients. All the patients screening was performed for hepatitis B and C virus by Immunochromatographic technique (ICT). Positive cases were confirmed by Enzyme Linked Immuno Assay (ELISA) and Polymerase Chain Reaction (PCR) subsequently.

The data collected was analysed for frequencies with percentages and mean with standard deviation in Statistical Package for Social Sciences (SPSS) version 18.

RESULTS

In this descriptive study of 165 cases of chronic renal failure on dialysis the age range was 10 60 years. Male were 98 (59.40%) and female were 67 (40.60%). Figure I: The male to female ratio of 1.46:1. The most common age group was 40-50 years with 64 (38.78%) patients followed by 30-40 years with 48 (29.09%) patients. Out of these 165 hemodialysis patients 11 (6.66%) were positive for hepatitis B and 09 (5.45%) were positive for hepatitis C virus and 02 (1.21%) cases were positive for both HBV and HCV. Table I.

Figure I: Gender distribution of chronic renal failure patients (n=165).



DISCUSSION

Dialysis patients of chronic renal failure are at high risk of acquiring HBV and HCV infections due to multiple blood transfusions as well as facing contaminated and high risk equipments of dialysis. Literature review show about 1.9% deaths of these patients are due to hepatitis infections. In Pakistan the incidence of these infections is about 10.2% in these patients of CRF.[12]

In this study the age range was 10 60 years with mean age of 26.5±16.3 years, In a study conducted by Tajbakhsh et al[13] in 2015 the age range was from 8-84 years with mean age of 54.89±15.54 years. In a study conducted by Yakaryilmaz et al[14] in 2006 the age range was from 16-80 with mean age of 45±29 years. In this study the male to female ratio was 1.46:1. In a study conducted by Tajbakhsh et al[13] the male to female ratio was 1.27:1, another study conducted by Yakarylimaz et al[14] the male to female ratio was 1.13:1.

In this study HBV was positive in 11 (6.66%) cases and HCV in 09 (5.45%) cases and 02 (1.21%) cases were positive for both HBV and HCV. In a study conducted by Tajbakhsh et al[13] HBV was positive in 7.0%, HCV in 5.9% both HBV & HCV were positive in 1.6% cases. Another study conducted by Yakarylimaz et al[14] HBV was positive in 13.3%, HCV in 20.2% both HBV & HCV were positive in 3.7% cases. Another study conducted by Bhaumik et al[15] in 2012 in India HBV was positive in 7.30%, HCV in 12.12% and both HBV & HCV were positive in 1.2% cases. A study conducted by Anwar et al[16] in 2016 in Pakistan HBV was positive in 10.6%, HCV in 25.53% cases. This study show a very high rather alarming incidence of HCV in dialysis patients.

Table I: Frequency of HBV and HCV positive cases in chronic renal failure patients (n=165).

Type of virus.	No. of cases	Percentages
HBV	11	6.66%
HCV	09	5.45%
Both HBV & HCV	02	1.21%

Another study conducted by Salvatierra et al[17] in 2017 in Argentina show HBV positivity in 8.7% and HCV in 9.9% cases and no mixed infection was noted in this study. Another study conducted by Zabedi et al[18] in 2016 in Pakistan HBV was positive in 3.8%, HCV in 7.4% cases and no mix infection case was reported. Other studies conducted by Kasaraju et al[19] and Rehman et al[20] in India and Saudi Arabia in 2015 and 2013 respectively show HBV positivity in 14% and 1.52% respectively and HCV positivity was in 7.0% and 1.1% cases respectively. Both these studies have gross differences in frequencies of HBV infections but have very close incidence in HCV infection.

Overall there are gross differences in incidence of HBV &HCV infection amongst dialysis patients, the reason behind is usually the precaustionary measure adapted by different dialysis centers and availability of diagnostic fascilities at these centers. It is observed that the newly established centers of dialysis in KPK are especially lacking these fascilities, as observed in this center of dialysis. Therefore it is essential need of the todays dialysis centers to provide in time safe, screened and matched blood transfusion regularly to reduce complications.

CONCLUSION

In this study there is high incidence of HBV and HCV infections in patients with CRF on dialysis, the reason is likely improper screening of blood for transfusion as well cross infection of patients from dialysis machines.

Recommendation: It is recommended to use more accurate and sensitive methods of screening for hepatitis B and C to reduce/eliminate this high risk of transfusion hepatitis as well as proper disinfection of hemodialysis machine to minimize transmission of these infections. It may be considered in future to develop portable, disposable and cheap hemodialysis machine, so that every person on dialysis may have his own machine.

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