



ORIGINAL RESEARCH PAPER

Microbiology

PREVALANCE OF HBV AND HCV INFECTIONS IN PATIENTS ON HAEMODIALYSIS

KEY WORDS:

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ABSTRACT

Hepatitis infections are important cause of morbidity and mortality among dialysis patients who have higher risk than general populations due to high number of blood transfusions, prolonged vascular access and the potential for exposure to infected patients and contaminated equipments. The present study of 121 patients was aimed to estimate the prevalence of HBV and HCV infections among those patients. At the start of study 20(16.52%) patients were infected with HBV, 27(22.31%) patients with HCV and 6(4.95%) patients with both. At the end of study 6 (4.95%) new patients were found infected with HCV and 2 (1.65%) new patients with HBV, Hence seroconversion from negative to positive is high for both HBV and HCV infections, but rate of HCV is higher compare to HBV. Stringent Universal Precautions in dialysis unit, proper isolations and separate dialysis machine for infected patients will contribute to reduce cross contamination and nosocomial infections. Immunization with HBV vaccine and regular screening will reduce the prevalence of HBV infections.

INTRODUCTION:

Hepatitis is global health problem. It is estimated that there are approximately 400 million hepatitis B virus (HBV) carrier in the world of whom over 50000 die annually from HBV associated liver disease. According to the third National Health and Nutrition Examination Survey (NHANES),^{3,9} million of the US civilian population have been infected with hepatitis C virus(HCV), of whom 2.7 million (74%) have chronic infection. About 3% of the world population has been infected with HCV and 170 million people are chronic HCV carrier.^{1,2}

Hepatitis infections are important cause of morbidity and mortality among dialysis patients who have higher risk for acquiring these viral infections than general populations due to high number of blood transfusions, prolonged vascular access and the potential for exposure to infected patients and contaminated equipments. Chronic Kidney Disease is an autoimmune state, so patients do not clear this viral infections. HBV is less prevalent than HCV infection.

AIMS AND OBJECTIVES

The present study was aimed to estimate the prevalence of HBV and HCV infections among patients on dialysis as well as associated risk factors for infections.

MATERIALS AND METHODS

This is a single centre prospective study carried out in dialysis unit of PDU HOSPITAL, Rajkot during period of August 2015 to July 2016. A total of 121 patients with chronic renal failure on maintenance dialysis were studied.

A 5-mL venous blood sample was collected from all the patients. The blood was kept at room temperature for 45 min and the serum was separated after low-speed centrifugation.

The dialysis unit has ten haemodialysis machines. Among these, one is dedicated for HBV and HBV/HCV co-infected patients and one machine is dedicated for HCV positive patients. Both the machines are placed away from the rest of the machines in an isolated room, so as to avoid cross contamination. The dialyzers of the patients are reused. Reprocessing of the dialyzers of the HBV / HCV positive patients are done in a separate room, away from the rest of the patients. Dedicated nursing staffs look after each patient during the dialysis session. Blood samples were drawn from the patients before the start of the first haemodialysis and every month thereafter. The serum samples were screened for HBsAg and anti HCV antibody. All the HBsAg negative patients were given HBV vaccination. Any patient positive for HBsAg or anti HCV or to both were dialyzed on the dedicated machines.

Testing of serum samples for Hepatitis B surface antigen (HBsAg)

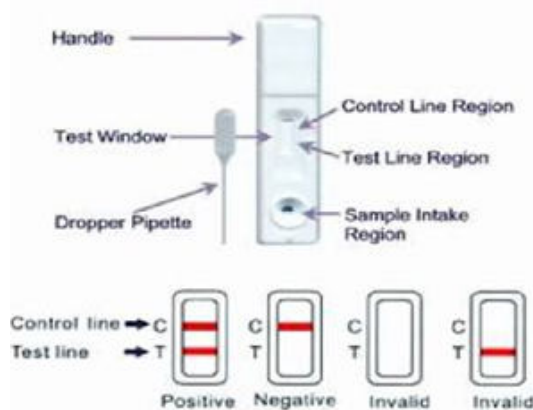
and anti HCV antibodies done by rapid card test which work on principle of rapid chromatographic immunoassay: A technique in which an antibody or antibody-related agent is attached to a support and used as part of a chromatographic system for the isolation or measurement of a specific target; also known as an immunochromatographic assay, a flow immunoassay or a flow-injection immunoassay and results were analyzed.

Interpretation of result:

If a distinct purple line is formed at the test zone marked 'T' and control zone marked 'C' the test result is positive.

If a distinct purple line is formed at the control zone marked 'C' the test is negative.

Test Cassette

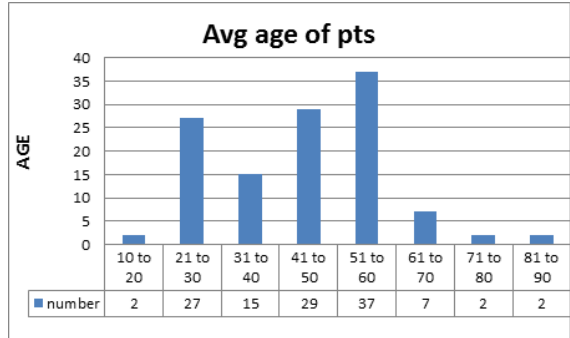
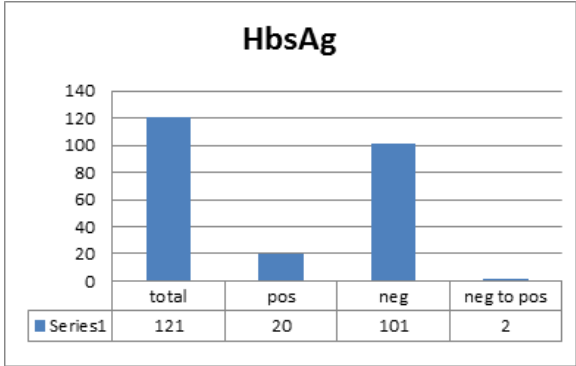
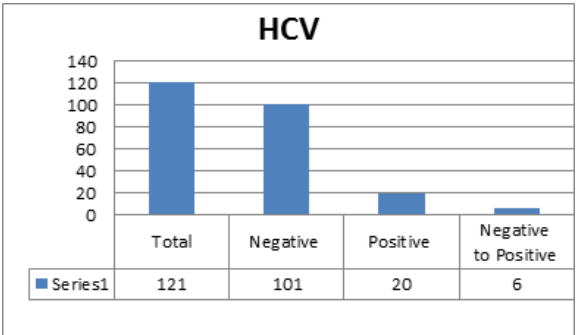
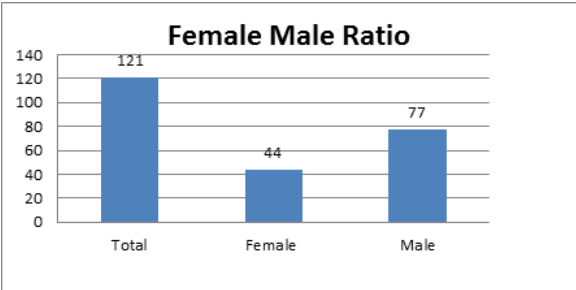


RESULTS

Total 121 patients attended the hemodialysis unit. Out of 121, Most of the patients were between 40 to 60 years of age and median age was 45 years with predominance of male. At the start of study 20(16.52%) patients were infected with HBV, 26(22.31%) patients with HCV and 6(4.95%) patients with both.

At the end of study 6 (4.95%) new patients were found infected with HCV and 2 (1.65%) new patients with HBV, Hence seroconversion from negative to positive was high for both HBV and HCV infections, but rate of HCV was higher compare to HBV. Many of studied patients had taken treatment from other centre also.

Hepatitis B vaccine had been administered in 111 out of 121 patients but antibody levels were not checked post vaccination. Vaccination status was not documented in 10 patients.



DISCUSSION

HBV and HCV share a common route of transmission and can coexist with each other. Haemodialysis patients are at high risk for hepatitis viral infections due to the high number of blood transfusions, prolonged vascular access and the potential for exposure to infected patients and contaminated equipment. The wide variation in prevalence rates may be due to many factors such as good infection control measures, socioeconomic factors.³

Significant immune status disturbances were registered in haemodialysis patients infected with both HBV and HCV compared to patients with HCV alone. A significant risk of cirrhosis development and decompensation of liver function is observed in HBV and HCV infected haemodialysis patients.⁴

Patients with chronic HBV and HCV concurrent infection show a reciprocal inhibition of viral genomes, an association with a severe clinical presentation and an infrequent response to interferon alfa treatment.⁵

Prevalence is variable from hemodialysis centre to centre, region to region and country to country and high cost hemodialysis vs low cost hemodialysis centre. In most of the study HBV infection among hemodialysis patients was between 4 and 11% and HCV infection was between 8 and 12%. Reddy et al have reported that among hemodialysis patients 5.9% were HCV-positive while 1.4% patients had HBV infection.⁶ Chandra et al have reported that among the patients of CKD, renal transplant or hemodialysis, HBV, HCV infection of both viruses were 7,46% respectively.⁷

CONCLUSION

Stringent Universal Precautions in dialysis unit, proper isolations and separate dialysis machine for infected patients will contribute to reduce cross contamination and nosocomial infections among patients on dialysis. Immunization with HBV vaccine before beginning the dialysis will reduce the prevalence of HBV infections among these high risk patients. Regular screening of the patients on dialysis for these viral infections is mandatory as it has detrimental effect contributing morbidity and mortality.

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