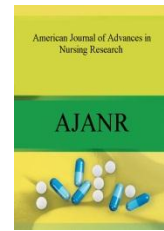




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### A STUDY ON LOW SERO-PREVALENCE OF HEPATITIS C INFECTION IN HAEMODIALYSIS PATIENTS IN SOUTH INDIA

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#### ABSTRACT

Hepatitis C virus infection is a critical health problem especially in hemodialysis patients which is relatively higher in those who are on maintenance hemodialysis than without. The aim of the study was to determine the prevalence of this infection among hemodialysis patients in our hospital. In this retrospective study a total of 4009 chronic renal failure patients undergoing hemodialysis at dialysis unit of our hospital were studied from March 2013 to March 2015. All the patients were screened for anti-HCV antibodies. The overall prevalence of Hepatitis C virus infection was 0.02%. New hepatitis C virus infections during maintenance hemodialysis in recent years are mainly caused by the lack of stringent universal precautions. Strict implementation of universal precautions for transmission and serological screening has led to markedly decreased infections in many hemodialysis units.

#### INTRODUCTION

Hepatitis C is a emerging public health problem throughout the world; chronic renal patients are highly exposed to this infection [1]. HCV infects an estimated 170 million people worldwide [2]. The prevalence of HCV among the Hemodialysis (HD) patients varies in different countries world-wide from 1% to 85% respectively. However, the data of prevalence of HCV infection among Indian HD patients is not adequate. The populations most affected by HCV are patients that undergo multiple blood transfusions, individuals who are intravenous and inhalant drug users, hemophiliacs, and hemodialysis patients [3-7].

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HCV infection can lead to chronic hepatitis C, liver cirrhosis and Hepatocellular carcinoma [8,9]. Chronic HCV infection detrimentally affects the life quality, decreases life expectancy, leads to renal transplant rejection, and increases the mortality of MHD patients suffering from chronic kidney failure [8,10,11].

#### MATERIALS & METHODS

In this retrospective study, data of 4009 patients having chronic renal failure (CRF) patients on HD, attending Hemodialysis unit of a tertiary care referral hospital attached to a medical college over a period of 2 years was collected. All patients had laboratory blood tests performed monthly and serologic viral hepatitis tests performed every 3 months after the start of hemodialysis. Permission of the Medical superintendent was obtained



and informed consent was taken from each patient before being included in the study and permission was obtained to publish this data.

Patients who had tested positive for anti-HCV antibodies at the beginning of the HD and who were HIV and HBsAg were excluded from the study

Information on the age of patients, duration of HD, number of blood transfusions and renal diagnosis was obtained from patient records.

Blood samples were collected from these patients before routine dialysis into tubes. Sera was separated and used for HCV enzyme-linked immunoabsorbent (ELISA) antibody tests.

The data was collected and statistically compiled.

## RESULT

There were 4009 cases of which, patients from 11–80 years of age were enrolled into the study. Maximum numbers of cases in this study were in the age group between 40 and 60 years (50%) and least number of cases were in the age group up to 11 - 20 years (3%) with a male preponderance (63.55%). In our study 2548 (63.55%) of the patients were males and 1461(36.44%) were females. Hypertensive nephropathy with CRF constituted the commonest disease group with incidence of 83.5%. coming to the antibodies, only one out of 4009 screened tested positive for anti-HCV antibodies, with a prevalence of 0.02%

## DISCUSSION

In the present study 2548 (63.55%) of the 4009 patients were males and 1461(36.44%) were females. Cases were more common in males than in females. This observation was similar to Chigurupati et al [12] (80.4%) and Bhaumik et al [13] (84.8%) with a male preponderance in India. Maximum number of cases in this study was in the age group between 40 and 60 years (50%) which is similar to Chigurupati et al [12], Bhaumik et al [13] and least number of cases were in the age group below 20 years (3%).

Prevalence of HCV in our study is 0.02%. The prevalence of anti-HCV seropositive patients among those undergoing regular dialysis in developed countries currently ranges between 3 and 20% [14,15].

Other studies have shown higher prevalence rates, Salunkhe et al [16]. reported 45%, Chadha et al [17] 12.1%, Sumathi et al [18].37.5%, Agarwal et al [19]. 42% Jaiswal et al [20] 30% and Chigurupati et al [12] 23% infection in HD patients in India.

If we consider world studies, Mosconi Get al. [21] 38%, Hayashi J et al [22] 51.6%, Pujol FH et al [23] 38% and Tokars JI et al [24] 10.4%.

The number of transfusions and the duration of dialysis affected the prevalence rates in this population.

The cause for the elevated prevalence of HCV infection in HD patients may be due to the excessive number of transfusions that these patients are frequently submitted to [25], and since the prevalence increases with the duration of dialysis treatment, there is an indication that the environment itself functions as a vehicle in the dissemination of the virus among the patients in dialysis centers [26-31].

In our dialysis unit we undertake patients who are negative for HCV by confirming it with anti HCV and ELISA for every 3 months, and by following strict universal precautions we were able to achieve a 0.02% HCV in our center.

Prevalence of infection is unpredictable from HD center to center, area to area and country to country and high cost versus low cost, it is not well understood whether this variability has got association with infection.

New HCV infections during MHD in recent years are mainly caused by the lack of stringent universal precautions. Strict implementation of universal precautions for HCV transmission has led to markedly decreased HCV infections in many HD units [32].

The low prevalence of infection <1% could be attributed to stringent infection control practices by the health care providers including the doctors and nurses, effective waste management practices and strict universal precautions followed. Our patients who are negative for HCV are regularly monitored and screened with ELISA every 3 months for all the blood borne pathogens.

In our study, only anti-HCV was taken as criteria to diagnose HCV infection. PCR test could be performed, since ours is a public sector hospital providing treatment and diagnosis free or at subsidized rates, it could not be performed due to cost effectiveness and non-availability. And PCR test is only needed if the patients are to be put on anti-viral therapy.

Thus although the limitation exists for the use of single anti-HCV test, considering all factors, it is still the test of CHOICE for HCV screening as recommended by Centers for Disease Control and Prevention (CDC). The current CDC recommendations for HCV screening in HD patients include testing for anti-HCV and serum ALT on admission, ALT every month and anti-HCV semiannually [33].

Universal precautions, especially stringent adherence of all necessary biosafety measures during HD, are considered to be the keystones to minimize HCV transmission related to HD and have maximized ideal prophylactic effects [34,35,36]. These measures include: (1) applying a disposable hemodialyzer to avoid sharing of a hemodialyzer; (2) systematic decontamination of the equipment and circuits after each patient's treatment; (3) avoiding sharing of medications, such as multiuse vials of heparin among patients; (4) avoiding sharing of



instruments such as tourniquets; (5) preparing any medications in a separate area; (6) disinfecting HD station surfaces timely; (7) cleaning hands and changing gloves before contacting different patients; (8) periodic testing of all patients for anti-HCV and HCV RNA; and (9) systematic training of health workers in HD units. Strict implementation of universal precautions for HCV transmission has led to markedly decreased HCV infections in many hemodialysis units [37].

CDC recommends that special precautions should be observed in dialysis units. These include wearing and changing of gloves and water-proof gowns between patients, systematic decontamination of the equipment circuit and surfaces after each patient treatment and no sharing of instruments (e.g., tourniquets)

or medications (e.g., multidose vials of heparin) among patients, to prevent nosocomial transmission of infections.

## CONCLUSION

In our study we had a very low prevalence rate of <0.05%. In a resource limited setting like ours by stringently following infection control protocols and guidelines, by adapting strict universal precaution measures, and effective Biomedical waste management practices, and by using ideal nursing practices we have been successful in curbing the prevalence of HCV.

There is a need for more studies and for the execution of precautionary and control measures of this infection in chronic renal patients.

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