

Prevalence of Hepatitis C Virus in Hemodialysis Patients in a Tertiary Care Centre

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Abstract-The current study aims at estimating the prevalence of positivity of anti-HCV antibodies in Hemodialysis patients. Hepatitis C virus related liver disease is significant cause of morbidity and mortality in patients with end stage renal disease who are on hemodialysis. Early diagnosis and treatment reduces mortality. With the informed consent, 450 patients with chronic kidney disease and on hemodialysis were included; 283 (63%) were male and 167 (37%) were female, and the mean age was 51 ± 17 years.

Materials and methods-Serum samples were collected from hemodialysis patients. The mean duration on dialysis 05 years. The samples of the both groups were screened for HCV antibodies using an ELISA test.

Results-Total of 250 patients who are on maintenance hemodialysis with mean duration of 05 years were included. Males-183 (73%), females-67 (27%), Median age -57+ 17 years. In this study, out of 250 patients, 27 (male-18; female- 9) were confirmed seropositive for HCV (10.8%).

Conclusion- The prevalence of HCV antibody positivity was high in the hemodialysis population. The use of preventive measures like isolation of patients along with the use of appropriate protocols will lead to a decrease in the prevalence and incidence of hepatitis C in our hemodialysis population.

Key Words- Hemodialysis, HCV, transmission, ELISA, End-stage renal disease.

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I. Introduction

Hepatitis C virus related liver disease is significant cause of morbidity and mortality in patients with end stage renal disease who are on hemodialysis. There is a particular concern because of the high risk for chronic liver disease, complications in renal transplantation, and death in these patients. Early diagnosis and treatment reduces morbidity and mortality. Prevalence reported in various studies was 6.7%-7.8%. It has been suggested that infection could be transmitted in HD patients during repeated dialysis procedures, but not through the equipment, probably due to procedural errors. The mode of transmission of this virus is still not conclusively defined. Factors such as blood transfusion and frequent parenteral interventions have been shown to be associated with increased risk for this HCV infection.^[2] The duration of HD treatment and the possibility of nosocomial HCV transmission have also been suggested as additional contributing factors for this emerging HCV infection in India. Thus the present study with 250 sample size, was undertaken to detect the current seroprevalence of HCV infection in patients on Hemodialysis in Osmania General Hospital, Hyderabad, Telangana.

II. Materials & Methods

After obtaining institutional ethical committee clearance, a total of 250 serum samples were collected from patients on hemodialysis in the Department of Nephrology, Osmania General Hospital, Hyderabad, Telangana, from September 2018 to September 2019 for detection of HCV markers. The test was performed using solid phase enzyme linked immunosorbent assay (ELISA) based on Direct Sandwich principle and the ELISA kit was manufactured by Accu Diagnostics Pvt. Ltd. For HCV, anti HCV (IgG) ELISA was performed using third generation ELISA test from Accu Diagnostics Pvt. Ltd. The ELISA tests were performed as per the manufacturer's instructions along with validity check and incorporation of internal controls in each run. Samples positive for anti HCV antibody by first test were retested by rapid test for HCV IgG antibodies using chromatographic immunoassay (Meril Diagnostics Pvt. Ltd).

ELISA kits for HCV detection Micro-titer ELISA plate showing HCV positive



III. Results

A total of 250 patients who are on maintenance hemo-dialysis with mean duration of five years were included. Out of these, males are 183 (73%), females are 67 (27%). The mean age of the study group was 57+ 17 years. Among them, total of 27 patients are HCV +ve. Out of these, 18 are males, 9 are females.

Figure- showing total HCV +ve patients among hemodialysis patients

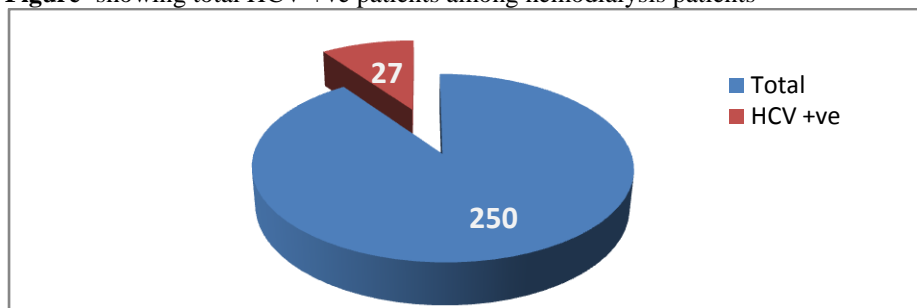


Figure - showing number of HCV positive males and females in hemodialysis population.

	TOTAL	MALES	FEMALES
PATIENTS ON HEMODIALYSIS	250	183	67
HCV POSITIVE	27	18	9

The prevalence of HCV infection was 10.8% in patients on hemodialysis in the present study.

IV. Discussion

HCV infection remains the major cause of chronic liver disease in HD patients. Although it presents a histologically and clinically milder hepatitis than in the general population -probably related to immunocompromised status and hemodialysis procedure- it negatively impacts survival on dialysis. There are certain disadvantages that make the assessment of HCV natural history in dialysis patients difficult. With the levels of serum aminotransferase and Gamma-Glutamyltranspeptidase within normal range, infection in hemodialysed chronic patients is often asymptomatic. Moreover, liver biopsy is performed rarely in HD patients because of platelet dysfunction and risk of bleeding. In 20%-30% of cases, acute hepatitis disappears spontaneously, while in most cases acute hepatitis progresses to chronic hepatitis. Patients with chronic hepatitis show varying degrees of inflammation and fibrosis [19, 20].

Hepatic injury is mediated not necessarily by the cytopathic effect of the HCV virus, but by the HCV-induced cellular immune response [21]. About 10%-40% of patients with chronic HCV infection develop cirrhosis after twenty-thirty years, while 1%-23% patients develop hepatocellular carcinoma (HCC) [19, 20, 21]. Patients with cirrhosis have a 3% incidence of HCC per year, whereas the death incidence due to

cirrhosis complications is 4% per year. Alcohol, smoking, metabolic syndrome, coinfection with HIV or other hepatotropic viruses contribute to the progression of fibrosis, while a major prognostic factor is older age [22].

The role of HCV infection genotype and viral load as risk factors for fibrosis progression is negligible [19, 20, 21]. Extrahepatic manifestations of chronic active HCV infection are: B cell lymphoma, ocular lesions, skin manifestations, sialadenitis and vasculitis associated with cryoglobulinemia

Therapy is indicated in selected cases with acceptable tolerability and clearance of the virus in about one third of the treated patients. The striking discrepancy in prevalence of HCV infection between hemodialysis patients and the general population may not be necessarily related to the renal disease, because HCV infection seems more common in maintenance hemodialysis patients compared with those who undergo peritoneal dialysis, a renal replacement therapy with less blood exposure.

Studies often make a comparison between cases of HCV-related liver disease in otherwise healthy individuals and those undergoing dialysis. For instance, Okuda et al [23], compared renal patients undergoing dialysis while suffering from chronic HCV infections in pre-cirrhotic stages, and renal-disease free patients with HCV infections, of which 25% already progressed to liver cirrhosis. Ishida et al. [24] included data on HCV-infected patients from approximately 314 hemodialysis centers in Japan and found lower incidence rates for cirrhosis (8.6%) and liver cancer (1.8%), significantly lower than those in the renal-healthy general population (15 to 20% for cirrhosis and 5 to 28% for HCC). The prospective study by Nakayama et al [25] showed a significantly lower incidence rate for HCC in dialysis patients (0.6% among 1470 such patients, with 6-year follow-up), while in non-dialyzed patients the incidence was 1.2% per year. In the study by Ishida et al [24], cirrhosis and CHC incidence in patients with dialysis for over ten years was lower than in patients with dialysis for less than ten years. The prevalence of HCV infection in our study was 10.8% in patients on hemodialysis in the present study and correlating with most of the studies.

V. Conclusion

HCV infection remains the major cause of chronic liver disease in HD patients. Early detection could result in better management of patients and a reduction in patient-to-patient transfer of HCV infection in hemodialysis units. Regular screening of hemodialysis patients is recommended.

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