Hepatitis C Virus Infection in Patients with End-Stage Renal Disease: A Study from a Tertiary Care Centre in India

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Background: **Hepatitis C Virus (HCV) infection is common in patients with end stage renal disease (ESRD) and is an important cause of liver disease. We describe the demographic, clinical and biochemical profile of these patients from a tertiary care center of north India.** ***Methods:*** **Records of consecutive patients of HCV infection with ESRD on maintenance hemodialysis or with renal transplantation who presented to our unit from January 2009 to June 2013 were analyzed. The diagnosis of HCV was based on HCV-RNA positivity and/or positive anti-HCV serology. Those with positive anti-HCV serology and negative HCV-RNA on two occasions at 3-month interval, without treatment with interferon, were excluded.** ***Results:*** **140 patients (median age 44 years [range 18–68], 69% males) were included. Six patients had co-infections (HBV 5, HIV 1). Most (99, 71%) patients were asymptomatic for liver disease and HCV was identified either on routine screening (39, 28%) or during investigation for raised liver enzymes (60, 43%). Remaining 41 (29%) were symptomatic for liver disease, either in the form of jaundice alone (14, 10%), or decompensated liver disease (27, 19%). Median time between initiation of hemodialysis and HCV detection was 33 (range 0–124) months. Thirty-four (27%) patients had received renal transplantation. In 11 patients HCV was detected after renal transplantation. In 23 (18%) patients anti-HCV was falsely negative but HCV-RNA was positive. Nearly 35% patients had concomitant diabetes. Median Bilirubin, AST, and ALT were 1.1 mg/dL, 42 IU/L and 44 IU/L, respectively. HCV-RNA was more than 5 log in 49/88(59%) patients. Median HCV-RNA was 6.5 $\times$ 10^5 IU/ml (Range 650 to >10 million IU/ml). Genotype-1 was the commonest genotype (30/56, 54%) followed by genotype-3 (17/56, 30%).** ***Conclusion:*** **HCV infection is usually asymptomatic in patients with ESRD, however, it may lead to jaundice and decompensated liver disease. False negative anti-HCV is quite common. We found that genotype-1 was commoner than genotype-3 in our cohort of ESRD patients. Most of the patients have high viral load. (J Clin Exp Hepatol 2016;6:21–25)**

Prevalence of hepatitis C virus (HCV) infection is quite high (10–40%) in patients with end stage renal disease (ESRD); and HCV infection remains an important cause of liver disease in these patients.[1] Many Indian investigators have studied the prevalence of HCV infection in patients with ESRD, but the data on profile of these patients remains sketchy.[2–12] HCV has a complex relation with kidney. On one hand, HCV infection leads to increased morbidity and mortality in patients with ESRD due to cirrhosis and hepatocellular carcinoma;[13] while on the other hand it can cause renal disease *per se* in form of glomerulonephritis and essential mixed cryoglobulinemia.[14] Treatment of HCV and response rate with conventionally available therapy differs in patients with ESRD from normal population and poses big challenge.[15,16] HCV leads to decreased graft and patient survival in patients who undergo kidney transplantation.[17] Treatment with interferon for HCV infection is contraindicated after renal transplant due to risk of graft rejection.[18,19] In this article we describe the demographic, clinical and biochemical profile of patients of HCV with ESRD from a tertiary care center of north India.

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Abbreviations: ACLF: acute-on-chronic liver failure; ALT: alanine aminotransferase; AST: aspartate aminotransferase; ESRD: end stage renal disease; GI: gastrointestinal; Hb: hemoglobin; HCC: hepatocellular carcinoma; HCV: hepatitis C virus; INR: international normalized ratio; PT: prothrombin time; RNA: ribonucleic acid; RT: renal transplantation; USG: ultrasonography
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PATIENTS AND METHODS

Patients

Inclusion Criteria

In this retrospective study we included consecutive patients of ESRD who were on maintenance hemodialysis or who had history of renal transplantation, and were

Table 1 Data of Patients Included and Excluded.

Anti-HCV	HCV-RNA	
Positive	Not available	Included n = 48
Positive	Positive	Included n = 67
Negative	Positive	Included n = 25
Positive	Negative[a]	Excluded
Negative	Negative	Excluded

[a]HCV RNA negative on two occasions at three month interval in absence of history of treatment with interferon.

referred to the first unit of our out-patient department or in-patient department of our hospital between January 2009 and June 2013 (i.e. over a period of four and half years) for HCV infection. The diagnosis of HCV was based on HCV-RNA positivity and/or positive anti-HCV serology.

Exclusion Criteria

We excluded those patients whose HCV RNA level (if available) was negative on two occasions at 3-month interval, provided HCV RNA negativity was not the result of interferon therapy (Table 1).

Evaluation

The aims and objectives of the study were to describe the demographic, clinical and biochemical profile of patients of HCV with ESRD from a tertiary care center of north India. The diagnosis of HCV was made on the basis of positive HCV RNA and/or positive HCV antibodies (ELISA). Patients who were Anti HCV negative but HCV RNA positive were included in the study.

During the initial visit, detailed clinical history was noted along with physical examination findings. Baseline parameters complete blood count, kidney function tests, liver function tests, prothrombin time, HBsAg, Anti-HCV & HIV were recorded. HCV RNA and genotype were obtained whenever possible. Ultrasonography (USG) abdomen and upper gastrointestinal (GI) endoscopy reports were also noted.

RESULTS

Demographic Characteristics

A total of 140 patients were included in this study. Their median age was 44 (range 18–68) years. Majority of the patients [91 (65%)] were within 41–60 years range (Table 2). Out of total 140 patients 69% (n = 97) were males. Six patients (5%) had co-infection; five with HBV and one with HIV. Fourty nine (35%) patients had concomitant diabetes.

Table 2 Age Groups of Patients.

Age groups	No of patients (n = 140)	%
11–20	3	2%
21–30	8	6%
31–40	24	17%
41–50	49	35%
51–60	42	30%
61–70	14	10%

Clinical Characteristics

Asymptomatic Patients

Most [99/140 (71%)] patients were asymptomatic for liver disease and HCV was identified either on routine screening [39/140 (28%)] or during investigation for raised liver enzymes [60/140 (43%)] as per conventional upper limit of AST (42 IU/dL) and ALT (48 IU/dL). Seventy-nine of 140 (56%) patients had high AST and ALT (without evidence of jaundice or ascites) if we take the upper limit of ALT 30 and 19 IU/dL for males and females, respectively as per new criteria.[12]

Symptomatic Patients

Remaining 41/140 (29%) were symptomatic for liver disease either in the form of jaundice alone [14/140 (10%)] or decompensated liver disease [27/140 (19%)]. The decompensation was in the form of ascites alone in 7/140 (5%) and jaundice plus ascites in 20/140 (14%). The etiology of decompensation in these 27 patients was due to end stage liver disease in 24 patients and acute-on-chronic liver failure (ACLF) in 3 patients. The acute event in ACLF was hepatitis E virus infection in two, and anti-tubercular therapy in one.

Investigations

Table 3 shows median values for common biochemical parameters like Hb, platelets, PT/INR, creatinine, bilirubin, albumin and liver enzymes (AST and ALT).

Table 3 Biochemical Parameters of Patients.

Parameters	Median	Range	Unit
Hb	9.3	6.4–12.8	Gm/dl
Platelets	1.12	0.26–5.36	Lac/cu·mm
INR	1.3	0.8–3.2	–
Creatinine	5.6	1.3–13.6	Mg/dl
Bilirubin	1.1	0.2–24	Mg/dl
Albumin	2.4	1.4–3.8	gm/dl
AST	42	11–1219	IU/L
ALT	46	13–1342	IU/L