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Research Article

PREVALENCE OF HEPATITIS C VIRUS AMONG THE HAEMODIALYSIS PATIENTS IN A TERTIARY CARE CENTRE AND ITS ASSOCIATION WITH RISK FACTORS

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ABSTRACT
HCV infection is a significant problem in the management of hemodialysis patients. Risk factors such as duration of haemodialysis, number of blood transfusion, nosocomial transmission within haemodialysis units have been identified. This study was conducted to estimate the frequency of Hepatitis C virus infection in patients on long term haemodialysis and to determine its risk factors. This was a cross sectional analytical study conducted at a tertiary care hospital in Mangalore from June 2011 to May 2012.Patients on long term haemodialysis in Nephrology unit were studied. Their medical records were reviewed for the presence of anti HCV antibodies detected by ELISA and HCV Tridot. Furthermore epidemiological and biochemical data were obtained to determine risk factors for HCV. 113 patients on haemodialysis were included. Out of these 12 patients (10.6%) were found to be anti HCV positive. The mean age of these patients was 50.8± 8.8 years while for anti HCV negative patients was 47.7 ± 8.1 years. There were 83% males in the HCV positive group compared to 69% males in the HCV negative group. Among 12 patients positive for HCV only 4 (33.33%) had elevated ALT levels. The mean duration of dialysis among HCV positive patients was 3.6 yrs ± 1.62 while 2.07 ± 1.11 yrs for HCV negative patients. The duration of dialysis was significantly longer in HCV positive patients. There was no statically significant correlation between HCV positivity and other risk factors. Patients on haemodialysis have 10.6% positivity for anti-HCV in our set up. The risk of acquiring HCV infection is significantly associated with increasing duration of dialysis.

Keywords: *Hepatitis C, Haemodialysis, Duration of Dialysis, ELISA*

INTRODUCTION
Hepatitis C virus (HCV) infection is associated with increased mortality among patients on haemodialysis. Prevalence of HCV infection in haemodialysis population varies worldwide from 1% to more than 70%.Prevalence is highly variable between units within same country (KDIGO). A no of risk factors have been identified for the HCV infection among haemodialysis patients which include cross infection from sharing of dialysis machine and the dialysis equipment, reprocessing of the dialyzers and blood lines and increased requirement for blood transfusion (Salma *et al.,* 2000; Jaiswal *et al.,* 1996). Third generation assays are being used worldwide and these have a better sensitivity and specificity. Third-generation assays also depicts the association duration of haemodialysis treatment and raised aminotransferase with anti-HCV antibody (Fabrizi *et al.,* 1997).

MATERIALS AND METHODS
Patients attending the dialysis unit from January 2013 to June 2014 were included in the study. Presence or absence of anti HCV antibodies were noted.
Demographic characteristics of the study participants were noted. The medical records were examined for details regarding duration of haemodialysis, the frequency of dialysis, blood transfusions in the past one year and other known risk factors such as iv drug abuse, immunosuppression etc. Anti HCV was performed by third generation ELISA (DIAGNOVA, RFCL LTD, Dehradun, India).

Statistical Analysis
Student t test was applied to compare the mean values of quantitative variables among anti HCV positive and negative patients. Odds ratio and 95% confidence interval were obtained to assess the strength of

association with regard to various risk factors among anti HCV positive and negative patients. Chi square test was calculated. A p value of <0.05 was considered significant.

RESULTS

The patients included in this study were divided into two groups anti HCV positive and anti HCV negative. The demographic and clinical characteristics of these patients are shown in [Table 1].

Among 111 patients 12 patients were found to be anti HCV positive. There were (83%) males in the anti HCV positive group and (69%) males in the anti HCV negative group. A comparision of risk factors between the two groups the anti HCV positive and anti HCV negative group is shown in (Table 2).

The mean duration of dialysis among the anti HCV positive was 3.6 yrs±1.62 while among the anti HCV negative group was 2.07±1.11 which was statically significant (p value=0.0016).No significant difference was found between the two groups with regard to other risk factors.

When years of dialysis were treated as a categorical variable, significant difference between anti HCV positive and negative groups was found. The risk of getting HCV infection was found to be significantly associated with increasing years of dialysis.

Table 1: Comparision of baseline characteristics between anti HCV positive and anti HCV negative patients

HCV serologic findings	No of patients (%)	Age years Mean SD	No of males (%)	Duration of dialysis Mean SD
Anti HCV positive	12(10.6%)	50.8± 8.8	83%	3.6 yrs ± 1.62
Anti HCV negative	101(89.3%)	47.7 ± 8.1	69%	2.07 yrs ± 1.11

Table 2: Comparision of risk factors between anti HCV positive and anti HCV negative patients

Risk factors	Anti HCV positive	Anti HCV negative	Odds ratio and 95% CI	p value
Dialysis for more than 2 years	58.33%	9.5%	8.1 2.21-29.6	0.0016
H/O blood transfusion	34.8%	17.8%	2.305 0.625-8.49	0.209
Raised ALT	33.33%	14.85%	2.866 0.761-10.72	0.117
H/O surgery	43.5%	31.1%	1.612 0.47-5.48	0.441
H/O transplant	8.33%	2.9%	2.96 0.28-31.0	0.363
H/O intramuscular injection	73.9%	54.1%	2.50 0.641-9.81	0.186

DISCUSSION

Patients undergoing haemodialysis have a high prevalence of HCV infection (Cotler *et al.,* 2002). Our figures showed that anti HCV prevalence was 10.6% in patients on long term haemodialysis. The prevalence rate is less compared to other studies. Jasuja *et al.,* (2009) reported 27.7%, Reddy *et al.,* (2005) reported 13.3%, Kumar *et al.,* (2011) reported 12.4%.

There are many routes of transmission of HCV in haemodialysis patients. In the present study it was seen that duration of dialysis is significantly longer among HCV positive patients as compared to HCV negative patients. Previous studies have also indicated that the duration of dialysis treatment is clearly correlated with HCV seropositivity (Sandhu *et al.,* 1999).

The present study shows that the ALT level is not a reliable marker of HCV infection in haemodialysis patients. In a prospective study carried out by (Saab *et al.,* 2000) it was observed that raised ALT level had inadequate positive predictive value for the diagnosis of HCV infection in haemodialysis patients.

Several studies have shown a significant association between the units of blood transfused with anti HCV positivity (Natov 1998). However in this study no such significant association between the units of blood transfused and anti HCV positivity was demonstrated.

The main limitation of the present study was the inability to use HCV RNA PCR as a confirmatory test. However third generation ELISA was used as a screening test. This test is more sensitive than the previous two generations of anti HCV test (Fabrizi *et al.*, 1997).

Conclusion

Patients on haemodialysis had 10.6% positivity for anti HCV in our set up. The risk of acquiring HCV infection is significantly associated with increasing duration of dialysis. Attention should be given to strict adherence to infection control measures in dialysis setting. All dialysis unit should apply universal precautions and use dedicated dialysis equipment for anti HCV positive patients.

REFRENCES

Cotler SJ, Diaz G and Gundlapalli S *et al.*, (2002). Characteristics of hepatitis C in renal transplant candidates. *Journal of Clinical Gastroenterology* **35** 191-195.

Fabrizi F, Lunghi G and Raffaele L *et al.*, (1997). Serologic survey for control of hepatitis C in haemodialysis patients: Third generation assays and analysis of costs. *Nephrology Dialysis Transplantation* **12** 298–303.

Jaiswal SP, Chitnis DS, Naik G, Artwani KK, Pandit CS and Salgia *et al.*, (1996). Prevalence of anti HCV antibodies in Central India. *Indian Journal of Medical Research* **104** 177-81.

Jasuja S, Gupta AK, Choudhary R, Kher V, Agarwal DK and Misra A *et al.*, (2009). Prevalence and association of hepatitis C viremia in haemodialysis patients at a tertiary care hospital. *Indian Journal of Nephrology* **19** 62-68.

Kidney disease: Improving global outcome. Hepatitis C Management and Haemodialysis. Available: http://www.kdigo.org/ASNO8_Hep C/

Natov SN, Lau JY, Bouthot BA, Murthy BV, Ruthazer R and Schimd CH *et al.*, (1998). Serologic and virologic profiles of hepatitis C infection in renal transplant candidates. *American Journal of Kidney Disease* **31** 920-7.

Reddy GA, Dakishnamurthy KV, Neelaprasad P, Gangadhar T and Lakshmi V (2005). Prevalence of HBV and HCV dual infection in patients on haemodialysis. *Indian Journal of Medical Microbiology* **23** 41-43.

Saab S, Martion P, Brezina M, Gitrich G and Yee HF Jr (2000). Serum alanine aminotransferase in hepatitis C screening of the patients on haemodialysis. *American Journal of Kidney Disease* **37** 308-15.

Salma G, Rostaing L, Sanders K and Izopet J (2000). Hepatitis C infection in a French haemodialysis unit, a multicentre study. *Journal of Medical Virology* **61** 44-51.

Sandhu J, Preiksaitis JK, Campbell PM, Carriere KC and Hessel PA (1999). Hepatitis C prevalence and risk factors in the northern Alberta dialysis population. *American Journal of Epidemiology* **150** 58-66.

Scotto G, Avcella F, Panunzio M, Savastano AM, Ktena M, Forcella M, Fazio V, Calzone G, Passione A, Procaccini D, Demin A and Stallone C (1999). Hepatitis C virus infection in four haemodialysis units of southern ltaly: epidemiological report. *European Journal of Epidemiology* **15** 217-223.

Surendra Kumar P, Venu G, Madhusudhana Rao A, Balakrishnan N, Saravanan T, Sofia Rani A and Subba Rao TM (2011). Prevalence and Risk Factors of Hepatitis C among Maintenance Haemodialysis Patients at a Tertiary-Care Hospital in Coimbatore, India. *Journal of Clinical Disease and Research* **5** 725-28.