CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1403813

Available online at: http://www.iajps.com Research Article

STUDY TO KNOW HEPATITIS-C VIRUS INFECTION PREVELANCE IN PATIENTS OF THALASEMIA IN SOUTHERN PUNJAB

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Abstract:

Objective: *The purpose of the study was to know HCV infection prevalence in thalassemia patients of Southern Punjab.*

Study Design: *A retrospective cross-sectional study.*

Place and Duration: *Thalassemia patients attending the Thalassemia center of Nishter Hospital, Multan for one year period from March 2016 to March 2017.*

Methodology: *Demographic data were obtained Hospital serum samples were analyzed for anti-HCV and anti-PCR technique.*

Results: *Of the 206 patients, 97 (47.1%) and 109 (52.9%) were 16.4 ± 6.42 years ± SD average of male and female, respectively. HCV prevalence at all was 27.99% (59/207, 96% CI: 23,5-35,7). 46 patients with HCV (46/59, 80.3%) also have HCV RNA positive. HCV antigen detected positive patients were much greater than HCV -ve patients (p <0.001). The results further show that HCV RNA higher prevalence was strongly linked with a transfusion for a longer time (p <0.004 and p <0.002, respectively).*

Conclusion: *While screening this project seems to reduce blood donation HCV infection, you need to use it more accurately to detect viral infections and treat patients with thalassemia more carefully with HCV infection technique.*

Keywords: *Thalassemia, Prevalence, HCV, Southern punjab.*

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Please cite this article in press Nadeem Khan et al., ***Study to Know Hepatitis-C Virus Infection Prevelance in Patients of Thalasemia in Southern Punjab.,*** *Indo Am. J. P. Sci, 2018; 05(08).*

INTRODUCTION:

The most common cause of Hepatitis C virus (HCV) is post transfusional hepatitis (PTH) and in many countries as last stage liver disease. With hereditary hemolytic anemia patients regular blood transfusion, especially thalassemia, improves survival rate but carries the risk of a definitive infection by bloodborne viruses, particularly viral hepatitis. In addition, in thalassemic patients HCV infection have an hepatic fibrogenesis enhancing effect due to hepatic iron load, which is usually unavoidable in patients receiving regular blood transfusions. In addition, in Punjab thalassemia is a major health issue, particularly in Pakistan. For this reason, the aim of this study was to determine the HCV infection prevalence in thalassemia patients of Punjab province. In Pakistan there are 25,000 patients of thalassemia major or above. In Pakistan Thalasemia Major is an important health issue, especially in Punjab province. This study showed anti-HCV prevalence in thalassemia patients was 28.1%.

METHODOLOGY:

This is a retrospective cross-sectional study conducted in Thalasemia center of Nishter Hospital, Multan for one year period from March 2016 to March 2017. A total of 206 patients received a total blood sample after informed consent was obtained. From whole blood, serum was separated, aliquots were taken and at -70 ° C it stored. Demographic data was obtained from patient records such as duration, blood transfusion and age.

Laboratory tests: Using anti-HCV assays, all serum were screened with commercial ELISA kits of microplate (DIA.PRO, Italy) according to given user manual. The samples were taken negative when the shear rate/ absorbance was greater than one and the SA / C ratio was <0.8 (values provided by the production manager). Using nested RT-PCR, Positive samples were confirmed for HCV. For HCV RNA extraction, 200 microliters of serum was obtained using high purity (Roche, Germany) viral nucleic acid kits according to the given directions. Using random primers, HCV RNA was transformed into cDNA immediately . By a nested CDNA was ordered PCR containing 5 'non-coding region (5'-NCR) specific primers for the HCV. Using SPSS software version 15.0 Statistical analysis was done. Using Chi-square, Data was compared Student's t test and Fisher's exact test. Differences were taken static when p <0.06.

RESULTS:

206 patients with thalassemia were evaluated. There were 98 (47.01%) male and 108 (53.0%) female (Table-I); 16.4 ± 6.42 years was the average age (range 3-35 years). (; 22,4-34,6% 95 CI 58/206) were positive anti-HCV by ELISA corresponding to 28.1% of fifty eight 206 patients.

Table-I: Characteristics of HCV RNA-positive and-negative thalassemia patients

Factors	*No. of patients* (n=206)	*Anti-HCV Positive* (n=58) %	*p value*	*HCV RNA Positive* (n=46) %	*p value*
Sex			1.0		0.8
Male	97	27 (27.8)		21 (21.6)	
Female	109	31 (28.4)		25 (22.9)	
Age groupsd			0.01		0.001
<10	41	5 (12.2)		1 (2.4)	
11-21	121	35 (28.9)		29 (24)	
>22	44	18 (40.9)		16 (36.4)	

Fifty-eight patients with HCV antibodies were higher in the mean age-negative patients (p <0.001, corresponding 18.98 ± 6.65 15.47 ± 6.06). There was no statistically significant dissimilarity in anti-HCV positivity between men and women with P value of one. The frequency of HCV positivity (48/137% 35.06%) was higher significantly (p <0.004) in patients who began receiving transfusion before serologic joining for the anti-HCV antibodies detection. Blood bank in Pakistan, among patients commencing transfusion after 1996 11/70, 15.7%) (Table II).

Table-II: HCV infection among thalassemia patients receiving multiple transfusions

Factors	*No. of patients (n=206)*	*Anti-HCV Positive (n=58) %*	*p value*	*HCV RNA Positive (n=46) %*	*p value*
Duration of transfusion (years)			0.003		0.001
<11	65	12 (18.5)		6 (9.2)	
12-22	120	34 (28.3)		29 (24.1)	
23	21	12 (57.1)		11 (52.3)	
First transfusion			0.003		0.001
Before or in 1996	136	47 (34.6)		41 (30.1)	
After 1996	70	11 (15.7)		5 (7.1)	
No. of units transfused			0.2		0.01
<100	40	7 (17.5)		4 (10)	
100-200	67	19 (28.4)		12 (17.9)	
>200	99	32 (32.3)		30 (30.3)	

The results show that anti-HCV incidence is associated significantly with transfusion for a long time (p <0.003). The HCV RNA prevalence was 22.03% (47/207, 96% CI: 16.91-29.05). Of the 58 positive anti-HCV patients, 46 were HCV RNA positive. Among patients with HCV positive RNA, the mean age of HCV positive RNA was higher (20.17 ± 6.32 versus 15.40 ± 6.15, p <0.001). HCV RNA prevalence among men was higher (21.6%) than in women (22.9%), it was not significant although (p = 0.79) (Table I). In 1996 (30.1%), in prevalence of HCV RNA there was no significant dissimilarity (p <0.001) between individuals who received transfusion first and those who started in 1996 (7.1%). HCV RNA was found to be higher among patients receiving more than 100 units of HCV RNA compared to those who received less than 100 units (8.7%) of blood (91.3%) (p <0.01) (Table II).

DISCUSSION:

In a recent report in Pakistan, 63.8% of anti-HCV antibodies were seen in thalassemia compared to 0.5% in blood donors. The confirmatory immunostaining test was used in this report using positive cases for HCV, showing that 93.0% of these samples were positive. Karimi et al. Reported that 73 out of 466 children (15.7%) who had experienced thalassemia in southern Punjab from Shiraz were positive for anti-HCV. In Indian another study, 24.2% of the thalassemic patients were positive for anti-HCV. Previous studies in Indian thalassemic patients have shown a wide range of 17-65% for the HCV infection prevalence. To know the HCV infection prevalence in thalassemia patients this is the first study which was conducted. The HCV infection prevalence in thalassemia patients ranges from 34% to 69.93% in bordering Arab countries with a sea border with Pakistan. For this reason, when we compare our results with them, the HCV infection incidence is relatively low in our thalassemia population. With higher HCV prevalence countries, there was a higher prevalence rate in patients with thalassemia in the general population. For example, in Egypt a study reported HCV prevalence in thalassemia patients is 75%; this rate accounts for 14.5% of the prevalence in the population of blood donors. However, in India (1.78%), which had a low prevalence of HCV among blood donors, the thalassemia prevalence was reported to be slightly low (26.0%). It should be noted that HCV is a devastating effect on public health. This geographical situation is the higher prevalence of anti-HCV in different populations. Mass migration from Iraq and frequent trips between Cuzestan state and neighboring Arab countries can affect HCV prevalence in our region. When serological tests for HCV were available, blood donor screening tests

were initiated in most countries. In 1997, a mandatory screening test for anti-HCV antibodies was performed in blood banks in Pakistan. Our study results showed that seropositivity to HCV declined from 35.0% to 16.07% after blood transfusion. It should be kept in mind that although blood donors are systematically screened, it is important to control blood donors for HCV. This finding suggests that further efforts are needed to increase the safety of blood transfusion. Serologic tests are used all over the world to detect HCV infection. Controversial results occurs in some serological tests. Detection of HCV RNA in anti-HCV negative patients may result in decreased antibody production or immunosuppression by window period of a new infection. In this study, mean age ± SD was significantly higher in patients with positive HCV ($p < 0.001$). the antibody was compared with the negative ones (15.47 ± 6.06) (18.98 ± 6.65). In elderly patients, the highest HCV infection rate reflects a higher transfusion frequency ($p < 0.01$) and it is important to provide safe blood to reduce the HCV infection incidence in the thalassemic population. The results of this study showed that HCV positive RNA patients had a significantly higher frequency of transmission than patients with negative HCV ($p < 0.001$ and $p < 0.01$) RNA for a period of time.

CONCLUSION:

In conclusion, the anti-HCV frequency in patients of thalassemia in Punjab is still low than in other neighboring countries and provinces, it is still high. Significant reductions in HCV infection risk after 1996 indicate the value of screening programs for blood donors. However, simple measures such as aseptic general rules applied, sterilization and careful disinfection of equipment, regular tests of patients, and liver enzymes serial determination should be commonly adopted in dialysis centers of Pakistan.

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