

PREVALENCE OF HEPATITIS-C ANTIBODIES AMONGST NURSING STAFF WORKING IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective; To determine the prevalence of HCV infection amongst nursing staff working in a tertiary care hospital. **Study Design;** Descriptive Cross-sectional Study.

Setting; Nursing staff of Nishtar Hospital Multan. **Subjects and methods;** One hundred fifty two senior nursing staff working in all wards of Nishtar Hospital Multan. Diagnosis of HCV infection was made by detection of antibodies to HCV in serum (ACON Hepatitis C Virus Rapid Test Strip, Serum). Those nurses whose test was positive by the above technique, underwent second generation Elisa testing for Hepatitis C to confirm the diagnosis (Cobas Core Anti-HCV EIA).

Results; Study was conducted upon 152 nursing staffs working in different wards of Nishtar Hospital Multan, which is a tertiary care hospital. These 152 staff nurses were checked for anti-HCV and only 3 cases were positive (1.97%) and 149 negative (98.03%).

Conclusion;

Study shows that the prevalence of HCV infection among nursing staff is 1.97%, which is low as compared to other studies but higher in comparison to the general population of Multan (0.27%). It is recommended that emphasis should be placed on prevention & a health care worker safety unit should be started in both private and public health care systems to increase the awareness. The health care workers should strictly follow appropriate preventive measures.

Key Words: Hepatitis B, Hepatitis C, Blood Transfusion, Health care workers

INTRODUCTION

Viral Hepatitis is a major public health problem throughout the world. Viruses which can lead to viral hepatitis are Hepatitis A Virus (HAV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Hepatitis D Virus (Delta agent), Hepatitis E Virus (HEV) and Hepatitis G Virus (HGV). Hepatitis A and E viruses are transmitted orally while Hepatitis B, C and G are transmitted parenterally. Viral hepatitis is a common public health problem in Pakistan.¹ Hepatitis B virus (HBV) and hepatitis C virus (HCV) are associated with clinically significant acute and chronic liver disease that may lead to hepatic cirrhosis. Post hepatitis B and C cirrhosis with its complications result in high morbidity and mortality and has high association with hepatocellular carcinoma.^{2,3} In Pakistan, hepatitis C virus (HCV) infection is endemic probably due to unsatisfactory hygiene, poor socioeconomic conditions and low literacy rate. The prevalence of HCV infection in blood donors⁴ is quoted to be 4.8 %. Approximately half of patients infected with HCV progress⁵ to chronic stage. HCV is transmitted by transfusion of blood and blood products, intravenous drug use⁶ i.e. the sharing of needles and sexual relationship. Vertical transmission from mother to child also occurs, but it is uncertain whether maternal transmission is across the placenta or during birth. In significant number of cases the exact mode of transmission is not known⁷. HCV causes acute and chronic hepatitis and infection can also be asymptomatic. A large percentage of these patients develop complications^{8,9} like cirrhosis, liver failure and hepatocellular carcinoma. In spite of the fact that antibodies against HCV are made, approximately 80% of the patients are chronically infected¹⁰ and continue to produce the virus for at least a year or so. The rate of chronic carriage of HCV is much higher than the rate of chronic carriage of HBV. It is not known if there is a lifelong immunity for patients who clear the infection once or if chances of relapse exist for such patients.

Many cases of hepatitis C are identified as a result of routine laboratory screening tests & at blood transfusion centers. The risk of HCV infection is higher in health care workers, therefore, it is essential to identify carriers. Nursing staff is particularly at high risk of developing HCV, as they draw blood and insert intravenous cannulas

in the wards, blood transfusions centers and haemodialysis units.¹¹ This study was done to analyze the frequency of HCV in the nursing staff working in a tertiary care hospital.

SUBJECTS AND METHOD

This study was conducted at of Nishtar Hospital Multan and 152 senior nursing staff working in the aforesaid hospital were included. After taking consent a proforma was filled for each volunteer which provided information about previous surgery, blood transfusion, accidental needle pricks while nursing patients, nose and ear piercing, tattooing, acupuncture, jaundice in spouse and performance of duty in hemodialysis unit.

Blood samples were collected from all the subjects. Sera were separated by centrifugation and then stored at 4⁰ C. A diagnosis of hepatitis C virus infection was made by detection of antibodies to HCV in serum. Hepatitis C virus rapid test device was used (ACON Hepatitis C Virus Rapid Test Strip). for the performance of test. This is an agglutination test which is used for screening purpose. Those nurses whose test was +ve by the above technique underwent second generation ELISA testing (Cobas Core Anti-HCV EIA). for hepatitis C to confirm the diagnosis. As this study was descriptive therefore percentages were calculated using SPSS-10 computer programme.

RESULTS

Study was conducted upon 152 nursing staffs working in different wards of Nishtar Hospital Multan, which is a tertiary care hospital. These 152 staff nurses were checked for anti-HCV and only 3 cases were + ve. (1.97%). The three nurses whose test was +ve by the above technique underwent second generation ELISA testing and the test was also positive. The prevalence of different risk factors for hepatitis C are summarised in table –1. Two out of 3 +ve cases strongly denied any H/O accidental needle prick however (as previously mentioned) H/O nose and ear piercing was +ve in all 3 of them. This study shows that highest risk factor was nose and ear piercing (100%), which is very common in general population. Second risk factor was accidental needle pricks (80.3%).

TABLE-1
RISK FACTORS AND ANTI HCV POSITIVITY
IN NURSING STAFF (n = 152)

S. No.	Risk Factor	Positive History		Anti HCV +ve	
		n	%	n	%
1	Previous surgery	65/152	42.8	2/65	3.1
2	Blood transfusion	35/152	23	2/35	5.7
3	Accidental Needle pricks	122/152	80.3	1/122	0.82
4	Nose & ear piercing	152/152	100	3/152	1.97
5	Tattooing	1/152	0.66	Nil	
6	Jaundice in spouse	11/152	7.24	Nil	
7	Worked in Hemodialysis unit	19/152	12.5	Nil	
	Total positive subjects	3/152 (1.97%)			

DISCUSSION

The carrier rate of HB_sAg and the prevalence of HCV in general population in Pakistan is very high. The studies to determine the prevalence of HBV and HCV have been done on healthy blood donors, health care workers, patients suffering from hepatic diseases and general population. The reported HB_sAg prevalence^{11,12,13} for healthy blood donors (2-10%), health care personnel (5-9%), patients with liver disease (10.2%) and for the general population (3.6-18.6%) is very high. Similarly anti-HCV prevalence¹¹ for healthy blood donors (4%), health care personnel (4-25.7%), patients with liver disease (29.63%) and for general population (00-20.89%), is also alarmingly high. These are heterogeneous groups and there is great variation in the prevalence among different groups, so these are not representative of the general population. In Pakistan, the real extent of hepatitis C virus infection is not known and the data about anti-HCV positivity in normal healthy population is not

available for Pakistan. Of the other 9 studies¹⁴⁻²² on the prevalence of HBV and HCV in healthy blood donors (table-2), 4 addressed HBV only, 2 focused on HCV while 3 studies estimated both B and C prevalence.

The prevalence of HCV in the present study is low (1.97%) as compared to most of the above-mentioned studies (table-2). However, it is higher in contrast to study done in healthy blood donors²² (6000 subjects) of Multan region (0.27%). Nursing staff, draw blood for cross matching and biochemical tests and insert I/V cannulas. They also transfuse blood to different patients and are at high risk²³ for accidental needle pricks. Application of therapy for HCV is very limited and is effective in only a small proportion of patients, emphasis should be placed on prevention.

In USA, it has been reported^{24,25} that infection of health workers was not dramatically higher than among the general population. This was confirmed by our study. However, all had nose and ear piercing in the past, which could be a significant factor in transmission.

In Pakistan, the real extent of hepatitis C virus infection is not known and the data about anti-HCV positivity in normal healthy population is not available. There is lack of community based epidemiological work. If data from all the blood transfusion centers and health care workers of hospitals is collected and published, we can get a representative prevalence value of HBV and HCV of the general population and the health care workers.

Table-2 HBV and HCV prevalence studies in healthy blood donors.

Year	Author	Station	No of Patients	HbsAg	Anti HCV
1996	Rehman N et al ¹⁴	Karachi	07209(B) 02557(C)	3.4	0.6
1996	Bhatti FA et al ¹⁵	Rawalpindi	00750	6.5	4.8
1996	Tanwani AK et al ¹⁶	Islamabad	20787	2.67	-----
1996	Chaudhry NT et al ¹⁷	Lahore	00200	2.0	-----
1999	Bukhari SM et al ¹⁸	Lahore	27057	3.4	-----
1999	Hashmi ZY et al ¹⁹	Faisalabad	00435	2.06	-----
1999	Jadoon HA et al ²⁰	Abbotabad	80	-----	0.0
1999	Lone DS et al ²¹	Lahore	186	-----	4.3
1998	Mahmood MA et al ²²	Multan	6000	3.37	0.27

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