

Frequency of Risk Factors for Hepatitis B (HBV) and Hepatitis C Virus (HCV)

M. Ashraf Chaudhry*
Farwa Rizvi**
Muhammad Afzal ***
Muhammad Zeeshan Ashraf
Sara Niazi
Atif Beg
Tahir Hussain Kharal

Objective: To determine the frequency of risk factors (causes of transmission) for HBV and HCV infections in hospitalized patients of Social Security Hospital, Rawalpindi.

Design: (Descriptive) cross sectional study

Place and Duration of study: The study was carried out in Social Security Hospital, Rawalpindi from June, 2008 to June, 2009.

Materials and methods: The patients were selected by consecutive (non-probability) sampling technique. Their data was collected through questionnaire. Informed written consent was obtained. SPSS version 15 was used to calculate the Descriptive statistics.

Results: A total of 103 patients of hepatitis (B&C) were selected, in which 12 (11.65%) were suffering from hepatitis B and 91 (88.35%) were suffering from hepatitis C, with significantly higher male preponderance. The history of injection was very high in both groups of patients i.e. in HBV (83.3%) and in HCV (86.8%). History of extra marital sex was higher in HBV patients (25%) as compared to HCV (17.6%). The important contributors for different types of hepatitis were blood transfusion (HBV = 16.7%, HCV = 48.4%, surgical procedure (HBV=8.3%, HCV=38.5%) and history of piercing in last six months (HBV=41.5%, HCV=70.3%). History of dental procedure in last 6 month was higher in HCV patients (HCV=45.1% vs. HBV=16.7%).

Conclusion: The important contributors for different types of hepatitis were blood transfusion, surgical procedures and history of piercing in last six months. In Pakistan there an urgent need to raise the public awareness about importance of properly screened blood transfusion, use of disposable needles and using new blades for shaving and hair cuts especially at barbers shops.

Key Words: Hepatitis C virus, Hepatitis B virus, Blood Transfusion, injections

**Prof. and HOD Community Medicine Dept. IMDC, Islamabad*
***Assistant Professor, Community Medicine Dept. IMDC, Islamabad*
****Senior Research Officer, Community Medicine Dept. IMDC, Islamabad*
Demonstrator, Pathology Dept. IMDC, Islamabad,
Demonstrator, Community Medicine Dept. IMDC, Islamabad
Consultant Physician, PAEC Hospital, Islamabad
Visiting Faculty, Community Medicine Dept. IMDC, Islamabad

Address for Correspondence:
Dr. Farwa Rizvi
Assistant Professor, Community Medicine Dept. IMDC, Islamabad
Email: farwa.rizvi@hotmail.com

Introduction

Viral hepatitis has emerged as a major public health issue and posed enormous burden over health systems in Pakistan. Hepatitis B and hepatitis C infections are the major blood transmitted infections in the country. Worldwide, 2 billion people have been infected with the hepatitis B virus (HBV) and more than 350 million have chronic lifelong infections, a virus 100 times more infectious than HIV.¹ As estimated, more than 180 million people worldwide are infected with hepatitis C virus and 3-4 million are newly infected each year.² Hepatitis B and C are amongst the world's greatest infectious disease health problems.³ Lack of Health Education and information about the safe surgery and dental treatments appear as major risk factors for

the transmission of hepatitis B and C in the community. Massive health care awareness drives need to be done for both health care providers and the public to reduce this menace.⁴ Hepatitis "C" has taken over from Hepatitis B as the single most important cause for cirrhosis and hepatocellular carcinoma. The prevalence of hepatitis B (4-5%) and hepatitis C (3-7%) is high in Pakistan and both these combined are affecting almost 10% of the population. Nationwide efforts are required to identify people who may have been infected with HBV and HCV. The important message of 'Get Tested' the focus of World Hepatitis Awareness Day 2007, encouraging the public to assess their risk factors and seek diagnosis. Facility-base data have shown higher prevalence of viral hepatitis in Pakistan.⁵

Another study conducted in Egypt showed that out of 5909 patients evaluated, 4189 (70.9%) showed positive antibody markers for hepatitis. Out of those,

40.2% had evidence of hepatitis A virus (HAV) infection, 30.0% hepatitis B virus (HBV) and 29.8% hepatitis C virus (HCV) infection. This surveillance system was useful in identifying the variable endemicity of acute HAV infection in different regions and for better understanding the epidemiology of HBV and HCV infection.⁶ The magnitude of chronic infection with hepatitis B virus (HBV) varies substantially between the countries. A better understanding of incidence and/ or prevalence of HBV infection and associated risk factors provides insight into the transmission of this infection in the community.⁷ Though both HBV and HCV are blood borne diseases, it appears that the virus is coming from the community to the house hold members and the possible sources are treating physicians using a reused syringe, dentists and barbers.⁸

Prevalence studies for infections and there risk factors are important because these give us an idea of the magnitude of the disease in a community and enable us to understand the dynamics of its transmission on which are based the control and prevention strategies. Frequency of risk factors about the modes of spread of Hepatitis B and C among the study population will be determined and so that emphasis could be stressed on awareness and health education for prevention. We designed a cross sectional study to determine the frequency of the different risk factors for Hepatitis B and C in hospitalized patients of Social Security Hospital, Rawalpindi. There was no conflict of interest regarding this study.

Materials and Methods

It was a hospital-based cross-sectional study and was carried out in Social Security Hospital, Rawalpindi from June, 2008 to June, 2009. The data was collected through questionnaire. Informed written consent was obtained from all study participants. The detailed information about each patient was entered on a pre-designed questionnaire, ID number, name, age, gender, occupation, monthly income, qualification, marital status, HBV and HCV laboratory/screening test results, and presence of risk factors like history of drug addiction, blood transfusion, family history of hepatitis, tattooing, previous surgery, dental procedures, hemodialysis etc. Patients with known liver diseases as well as metastatic cancer were excluded from the study. Similarly, patients who were already on Interferon treatment or who had treatment induced leucopenia were also excluded.

Keeping P (taken from literature review) = 96%,⁸ Confidence Interval= 95%, Absolute precision=0.04%,

using the formula for calculating sample size, $n = 93$ patients but keeping in mind the missing data and errors; we selected 103 patients for our study. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 16. Descriptive statistics was used to calculate the frequencies for qualitative information and mean with standard deviation for quantitative data in HBsAg and Anti-HCV positive cases.

Results

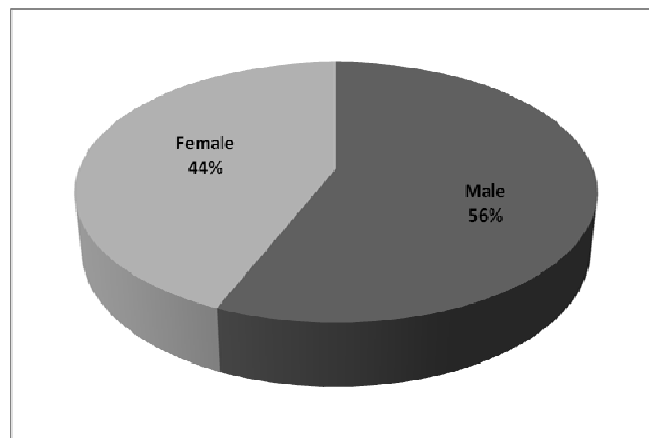


Figure I: Gender Distribution of Patients

A total of 103 patients of hepatitis (B&C) coming to medicine department of social security hospital Islamabad were included in the study. Among 12 (11.65%) were suffering from hepatitis B and 91 (88.35%) had from hepatitis C.

Table I: Demographic Characteristics

Demographic Characteristics		Hepatitis	
		HBV (n=12)	HCV (n=91)
Gender	Male	10 (83%)	48 (53%)
	Female	2 (17%)	43 (47%)
Age	< 25	3 (25%)	26 (29%)
	25-45	4 (33%)	39 (42%)
	> 45	5 (42%)	26 (29%)

Discussion

The magnitude of chronic infection with hepatitis B virus (HBV) varies substantially between the countries.

A better understanding of frequency of HBV infection and associated risk factors provides insight into the transmission of this infection in the community. Therefore, educational intervention targeted on health-care professionals about the importance of infection control measures may include safe injection practices and proper sterilization of medical and dental instruments. Education of barbers about the significance of sterilization of their instruments may help in reducing the burden of community-acquired infection with HBV and other blood-borne pathogens in this and similar settings. Strict enforcement of legislation to ban un-

Table II: Comparison of different risk factors of HBV and HCV

Risk Factors	Hepatitis	
	HBV (n=12)	HCV (n=91)
Patient of hepatitis B or C in relatives	2 (18.2%)	9 (9.9%)
History of injection in last 6 months	10 (83.3%)	79 (86.8%)
History of extra marital sex in last 6 months	3 (25%)	16 (17.6%)
Blood transfusion in last 6 months	2 (16.7%)	44 (48.4%)
Surgical procedure in last 6 months	1 (8.3%)	35 (38.5%)
Dental procedure in last 6 months	2 (16.7%)	41 (45.1%)
History of piercing in last 6 months	5 (41.7%)	64 (70.3%)
Tattooing on the body	2 (16.7%)	8 (8.9%)
Shave by barber or at home	*	*
	Himself at home	4 (33.3%)
	Barber	6 (50%)
	N/A	2 (16.7%)
		43 (47.3%)

* N/A= Not Applicable

qualified dental practitioners may further help curb the HBV spread.⁷

There were 58 (56%) males and 45 (43%) females in the study (fig.1), which shows a higher proportion of patients in males. On the basis of the results of the study it is obvious that males have higher proportion in both types of hepatitis B&C groups. It might be because of the fact that males have more access to go out in society and also for frequent hair cuts and shaving by barbers and hair dressers. In a

local study, it was noticed that overall, males were more infected with chronic liver disease but hepatitis B appeared to affect more men than women indicating gender affinity of virus to males.⁸

In another study, it was shown that there was higher prevalence of HCV and HBsAg among the group of patients who received transfusions before the systematic screening of blood donors. So exposure to blood transfusions was the main risk factor for HCV and HBV infection. The systematic serological screening of blood donors was highly effective in reducing transfusion transmitted infections.⁹ In the absence of effective screening programs, hepatitis B virus (HBV) is responsible for a substantial proportion of cases of post-transfusion hepatitis, liver cirrhosis and hepatocellular carcinoma.¹⁰ An estimated 2 billion people are infected with HBV worldwide, among them 350 millions are chronic carriers: hepatitis B surface antigen (HBsAg) positive.¹¹

In this study majority of patients (43%) in hepatitis C group belonged to middle age adult group (25 – 45) and in HBV group about 42 % were of higher age than 45 years (table 1). According to the results of this study males had higher rate of HBV and HCV. The age of patient was not considerably related with type of hepatitis although it showed a higher trend in middle age group (table I).

For the prevention of HBV a potent vaccine is available which has over 95% protection rates. No vaccine is available for HCV. In Pakistan the frequency of HCV appears to be increasing and the possible sources include frequent injections for minor ailments, shaving by barbers, dental treatments and blood transfusions along with surgeries. Improper sterilization of medical devices and reuse of syringes has been reported to be the major factor for this high increase in uncontrolled studies.^{12, 13}

Intravenous drug use, needle stick injuries, haemodialysis, tattooing and multiple sexual partners have been identified as common modes of HBV transmission in the developed world.¹⁴ Parenteral routes implicated as the most likely factors for HBV transmission include un-sterilized needles and syringes in health-care settings. A number of studies have shown the relationship between therapeutic injections using non-sterile needles and the transmission of HCV.^{15, 16}

To assess the frequency of different risk factors for HBV and HCV, information was taken from patients. The history of injection was very high in both groups of patients i.e. in HBV (83.3%) and in HCV (86.8%). History of extra marital sex was a bit higher in HBV patients (25%) as compared to HCV (17.6%).

The major contributors on the basis of results for different types of hepatitis were blood transfusion (HBV = 16.7%, HCV = 48.4%), surgical procedure

(HBV=8.3%, HCV=38.5%) and history of piercing in last six months (HBV=41.5%, HCV=70.3%).

Blood transfusions is still the major cause of HCV transmission in the country; as a survey of blood banks in the large urban centers of the country showed that only about 25% of them tested blood and blood product donations for HCV infection to keep the cost down.¹⁷ Pakistan lies between middle to low income countries with over one-twelfth of labor force is unemployed, over one third of the population subsists in poverty and over half the population is illiterate, with parts of the country being worse than what the national average indicates.¹⁸

History of dental procedure in last 6 month was higher in HCV patients (HCV=45.1% vs. HBV=16.7%). Although history of tattooing on the body was more in hepatitis B patients as compared to hepatitis C patients (HBV=16.7%, vs. HCV=8.9%). Similarly type of hepatitis was also independent of way of shave i.e. shave at home or shave done by barber.

Various studies done in selected groups have shown variable prevalence of chronic infection with HBV as assessed by HBsAg positivity: 2%–14% in blood donors.¹⁹ Facial shaving from barbers has been repeatedly documented as a risk factor for transmission of hepatitis B and C viruses in various countries. Barbers in this part of the world are mostly un-aware of the transmission of blood borne pathogens through shaving tools.²⁰

In our country, we have a great problem of quackery and street dentists, barbers and natural healers also contribute to the spread of HBV and HCV infections. Pregnant women, health care workers and sex partners of hepatitis B patients should be screened for hepatitis B and subsequently vaccinated.

Conclusion

In Pakistan there an urgent need to raise the public awareness about importance of properly screened blood transfusion, use of disposable needles and using new blades for shaving and hair cuts especially at barbers shops. In our study, the important contributors for different types of hepatitis were blood transfusion, surgical procedures and history of piercing in last six months.

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