

SEROPREVALENCE OF HEPATITIS B AND HEPATITIS C IN HEALTH CARE WORKERS IN ABBOTTABAD

Javed Sarwar, Nasreen Gul*, Muhammad Idris*, Anis-ur-Rehman†, Jamila Farid*,
Muhammad Yasir Adeel††

Department of Medicine, Women Medical College Abbottabad, *Department of Pathology,

†Department of Paediatrics, ††Department of Medicine, Ayub Medical College, Abbottabad.

Background: Hepatitis B and C viruses (HBV & HCV) are hepatotropic viruses causing viral hepatitis, chronic liver disease and hepatocellular carcinoma. Modes of infection are more or less similar. HBV is vaccine preventable while HCV is not. They are prevalent in different parts of the world including Pakistan. The rate of prevalence varies from region to region and among different population segments. The present study was planned to see the prevalence of HBV & HCV among health care workers in various hospitals of Abbottabad. **Method:** The study was conducted at the District Headquarter Teaching Hospital Abbottabad over a period of one year on 125 health care workers of different categories and either sex. Brief history was taken from each individual and physical examination was performed. Blood samples were taken for HBV and HC serology. Positive sera were confirmed by 3rd generation ELISA. **Results:** As much as 8% individuals were positive for HBV or HCV. HBV alone was seen in 3 out of 10 (30%) individuals. HCV alone was also found in 3 out of 10 (30%) individuals. HBV and HCV co-infection was seen in 4 out of 10 (40%) individuals. Dental procedures, needle prick and surgical procedures were found the common risk factors. Blood transfusion was known in 2 out of 10 (20%) individuals. Family history of hepatitis was not positive in any individual. **Conclusion:** Results of the present study differ from those of the previous studies conducted on health care workers in Pakistan.

Keywords: Viral hepatitis, Hepatitis B, Hepatitis C, Hepatocellular carcinoma, chronic liver disease

INTRODUCTION

There are about 130 million persons having hepatitis C infection, the world over. Its prevalence varies from region to region. The highest prevalence (15–20%)¹ has been found in Egypt while the United Kingdom has lowest prevalence (0.01–0.1%) According to an estimate, 27% of cirrhotic patients and 25% of patients with hepatocellular carcinoma are infected by hepatitis C.²

Hepatitis B on the other hand, has been found to infect about 350 million people globally.³ Like hepatitis C, the prevalence of hepatitis B also varies from low to high in different parts of the world.⁴ Both HBV and HCV are blood-borne hepatotropic viruses but have distinct routes of transmission. Most commonly, HBV is acquired by vertical transmission from an HBsAg positive mother or via horizontal transmission in childhood.^{5–9} However, HCV is primarily transmitted parenterally in adulthood by intravenous drug use, blood transfusion, or medically related parenteral exposures, but rarely through the placenta, breast-feeding, or sexual contact.¹⁰ Previous studies have shown that frequent medical parenteral injections that used nondisposable needles were highly associated with HCV seropositivity and that most of the anti-HCV positive persons did not have a history of blood transfusion or intravenous drug use, the most commonly documented risk factors for HCV. Hepatitis C virus is less efficiently transmitted by

single small dose percutaneous exposures.^{11,12} Solid organ transplants from infected donors is also a known cause of viral transmission.

In Pakistan several previously conducted studies have shown different prevalence rates of HBV and HCV infection.^{13–19} The present study was planned to see the seroprevalence of HBV and HCV among health care workers (doctors, paramedics and supporting staff) from different hospitals at Abbottabad.

MATERIALS AND METHODS

This prospective cross sectional study was conducted mainly at District Headquarter Teaching Hospital Abbottabad from 31 December 2006 to 31 December 2007 on 125 participants of age groups (18 to 60 years) and either sex. Participants from Women and Children Hospital Abbottabad were also studied. After an informed written consent, brief clinical history was recorded and relevant physical examination was carried out. Three ml blood sample was collected in a disposable syringe under strict aseptic conditions and was allowed to clot. Serum was separated in a clear plastic bottle for further testing. The initial screening was carried out by ELISA (3rd generation ELISA technique). Sera with evidence of HBsAg or anti HCV were subjected to PCR (qualitative and quantitative).

The data was collected on a structured proforma, and statistically analyzed by using SPSS 11.0 for windows.

RESULTS

Results are shown in Tables 1–8. A total of 125 individuals were screened including 83 (67%) males and 42 (33%) females with male to female ratio 1.9:1 (Table-1). The median age was 41 years (range 25–58 years) (Table-2). None of the patients knew their previous viral hepatitis status. Out of 125 subjects, 15 (12%) were doctors, 75 (60%) were paramedics, 10 (8%) were security guards, 10 (8%) were clerical staff, and 15 (12%) were laboratory workers (Table-3).

Out of total 125 subjects, only 60 (48%) were vaccinated against HBV (Table-4). Only 2 out of 10 (20%) positive cases were vaccinated.

Hepatitis B, C or B+C mixed infection was seen in 10 out of 125 (8%) patients. Hepatitis B alone was seen in 3 out of 10 (30%) infected cases while HCV was positive in 4 out of 10 (40%) infected cases. HBV and HCV mixed infection was seen in 4 out of 10 (40%) of the affected individuals (Table-5). Among the positive individuals 5 (50%) were male and 5 out of 10 (50%) were female (Table-6). Out of 10 positive cases, 7 (70%) had dental procedure, 4 (40%) had history of needle prick, 3 (30%) had been transfused and 3 (30%) had surgery in the past (Table-7). HBV/HCV negative individuals did not have any history of blood transfusion or family history of HBV/HCV. No doctor was found having HBV while one had HCV infection. Among the nursing staff, 3 had HBV and 1 had HCV. One ECG Technician, 1 Dai, and 1 Ward Boy had HBV while 1 hospital tailor and 1 hospital security guard had HCV (Table-8).

Table-1: Gender of the subjects (n=125)

Gender	Number	Percentage
Male	83	66.4
Female	42	33.6
M: F	1.9:1	

Table-2: Age of the subjects (n=125)

Age group in years	Number	Percentage
25–40	49	39.2
41–55	67	53.6
>55	09	7.2

Table-3: Designation in Health Department (n=125)

Designation	Number	Percentage
Doctor	15	12
Paramedics	75	60
Security Guards	10	8
Clerical	10	8
Lab worker	15	12
Total	125	100

Table-4: Status of subjects regarding vaccination against HBV (n=125)

Vaccinated	Number	Percentage
Yes	60	48
No	65	52

Table-5: Percentage of Hepatitis B, Hepatitis C and mixed infection (n=10)

Viral status	Number	Percentage in affected
HBV only	3	30
HCV only	3	30
HBV+HCV	4	40
Total	10	100

Table-6: Gender of infected individuals (n=10)

Gender	Number	Percentage
Male	5	50
Female	5	50

Table-7: Frequency of risk factors (n=10)

Procedure	Yes	%	No	%
Dental procedure	7	70	3	30
Needle prick	4	40	6	60
Transfusion	3	30	7	70
Surgical procedure	3	30	7	70

Table-8: Designation of health workers with Hepatitis B and C (n=10)

Designation	HBV	HCV
Doctor	-	1
Nurse	3	1
ECG technician	1	-
Dai	1	-
Ward boy	1	-
Tailor	-	1
Security Guards	-	1

DISCUSSION

Hepatitis B and C are global health problems mostly in the developing countries. Besides other modes of infection, occupational exposure of health care workers to infected blood remains one of the major modes of infection and risk factor. Some of the studies conducted in Pakistan have revealed varying rates of HBV and HCV prevalence in different patients groups as well as the general population. Nasir *et al* described a prevalence of (2.56%) for HBV and (5.31%) for HCV in health looking general population.²⁰ Khattak *et al* found that HBV was seen in (3.3%) and HCV in (4.0%) blood donors.²¹ The Present study has revealed overall 8.0% prevalence of HBV, HCV and hepatitis B+C mixed infection in health care workers. Hepatitis B and hepatitis C each alone was seen in 5.6% individuals. Hepatitis B and hepatitis C mixed infection was seen in 3.2% individuals. Regarding vaccination against HBV, 98% individuals were vaccinated and the remaining 52% were not. Among 5 out of 10 individuals having HBV, none had been vaccinated against HBV. Nilofer *et al* reported different figures regarding vaccination of health care workers.²² Risk factors for HBV and HCV transmission in the present study included dental procedures, needle prick and surgical procedures. On the other hand, needle prick injuries were found to be the main risk factor for HBV and HCV transmission amongst health care workers studied previously.²²

Hepatitis B was not seen in doctors. One out of 15 doctors (12%) had HCV infection, 3 out of 17 nurses (18%) had HBV and one out of 17 (6%) had HCV infection. One hospital tailor and one policeman were found to have HCV infection. Our findings are in accordance with some of the figures reported earlier²⁰ and different from the others²¹.

CONCLUSION

Health care workers provide services to the suffering humanity. Care of the health care provider is of utmost importance because a healthy worker can provide better services. Moreover, health care workers infected by any of the hepatitis viruses may transmit infection to the patients, especially if they are not aware of their own HBV or HCV status. In our study it has been seen that only 48% workers were vaccinated against HBV and HBV infection was seen exclusively among those who were not vaccinated. Therefore, vaccination of health care workers should be mandatory at the time of entry in service. Secondly, yearly screening of workers should be done in order to detect infection early and take preventive and therapeutic measures well in time.

REFERENCES

1. Frank C, Mohamed MK, Strickland GT, Lavanchy D, Arthur RR, Magder LS, *et al* The role of parenteral antischistosomal therapy in the spread of hepatitis C virus in Egypt. *Lancet* 2000;355:887-91.
2. Perz JF, Armstrong GL, Farrington LA, Hutin YJ, Bell BP. The contributions of hepatitis B virus and hepatitis C virus infections to cirrhosis and primary liver cancer worldwide. *J Hepatol* 2006;45:529-38.
3. Lavanchy D. Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures. *J Viral Hepat* 2004;11:97-107.
4. McMahon BJ. Epidemiology and natural history of hepatitis B. *Semin Liver Dis* 2005;25(Suppl 1):3-8.
5. Sung JL. Prevention of hepatitis B and C virus infection for prevention of cirrhosis and hepatocellular carcinoma. *J Gastroenterol Hepatol* 1997;12:S370-S376.
6. Stevens CE, Beasley RP, Tsui J, Lee WC. Vertical transmission of hepatitis B antigen in Taiwan. *N Engl J Med* 1975;292:771-4.
7. Beasley RP, Hwang LY, Lin CC, Leu ML, Stevens CE, Szmuness W, Chen KP. Incidence of hepatitis B virus infections in preschool children in Taiwan. *J Infect Dis* 1982;146:198-204.
8. Di Bisceglie AM. Hepatitis C. *Lancet* 1998; 351: 351-55.
9. Dienstag JL. Sexual and perinatal transmission of hepatitis C. *Hepatology* 1997;26(Suppl 1):66-70.
10. Ragni P, Gallo G, Balocchini E, Sangalli M, Lopalco PL, Moiraghi A, Stroffolini T. Changing epidemiology of parenterally transmitted viral hepatitis: results from the hepatitis surveillance system in Italy. *Dig Liver Dis* 2001;33:778-84.
11. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. Centers for Disease Control and Prevention. *MMWR Recomm Rep* 1998;47:1-39.
12. Puro V, Petrosillo N, Ippolito G. Risk of hepatitis C seroconversion after occupational exposures in health care workers. Italian Study Group on Occupational Risk of HIV and Other Bloodborne Infection. *Am J Infect Control*. 1995;23(5):273-7.
13. Mohammad J, Hussain M, Khan MA. Frequency of Hepatitis B and Hepatitis C infection in Thalassaemic Children. *Pakistan Ped J* 2003;27(4):161-4.
14. Ali N, Khattak J, Anwar M, Tariq WZ, Nadeem M, Irfan M, Asif M, Hussain AB. Prevalence of hepatitis B surface antigen and hepatitis C antibodies in young healthy adults Pakistan. *J Pathol* 2002;13(4):3-6.
15. Farooqi JI, Farooqi RJ. Relative Frequency of Hepatitis B Virus and Hepatitis C Virus infections in patients of Cirrhosis in NWFJ. *J Coll Physicians Surg Pak* 2000;10:217-9.
16. Fayyaz M, Qazi M A, Ishaq M, Chaudhary G M, Bukhari M H. Frequency of hepatitis B and C seropositivity in prisoners. *Biomedica* 2006;22:55-8.
17. Aziz MS. Prevalence of anti Hepatitis C antibodies and Hepatitis B surface antigen in healthy blood donors in Baltistan. *Pak Armed Forces Med J* 2006;56:189-91.
18. Mirza IA, Mirza SH, Irfan S, Siddiqi R, Tariq WZ, Janjua AN. Seroprevalence of Hepatitis B and C in young adults seeking recruitment in armed forces. *Pak Armed Forces Med J* 2006;56:192-7.
19. Farooq MA, Iqbal MA, Tariq WZ, Hussain AB, Ghani I. Prevalence of Hepatitis B and C in a healthy cohort. *Pakistan J Pathol* 2005;16:42-6.
20. Khokhar N, Gill ML, Malik GJ. General Seroprevalence of Hepatitis C and Hepatitis B virus infections in population. *J Coll Physicians Surg Pak* 2004;14:534-6.
21. Khattak MF, Salamat N, Bhatti FA, Qureshi TZ. Seroprevalence of hepatitis B, C and HIV in blood donors in northern Pakistan. *J Pak Med Assoc* 2002;52:398-402.
22. Ali NS, Jamal K, Qureshi R. Hepatitis B vaccination status and identification of risk factors for Hepatitis B in health care workers. *J Coll Physicians Surg Pak* 2005;15:257-60.

Address for Correspondence:

Dr. Javed Sarwar, Assistant Professor, Department of Medicine, Women Medical College, Abbottabad, Pakistan.

Tel: +92-334-9503003

Email: drjaved_pk@yahoo.com