

Risk Factors in the Transmission of Hepatitis B & C: A Study of 100 Cases of Chronic Liver Disease

Atif Munir & Muhammad Zafarullah Khan

Background: Hepatitis B and Hepatitis C positive cases have touched mammoth proportions. One third of world's population has been infected with hepatitis B and about 3% of population has been infected with hepatitis C.

This descriptive study was carried out to analyze the risk of transmission of hepatitis B & C in Pakistan population and compare it with national and international data.

Methods: Total numbers of 100 patients were included. These patients had established liver disease and infectively was proven by ELISA.

Results: Total numbers included in this study was 100. Out of them 20% had hepatic B and 80% had hepatitis C. 60% were male and 40% were females. 50% of hepatitis B had undergone body piercing, 30% had undergone circumcision, 25% had beared shaved by barbers. Similarly 63% of hepatitis C had been circumcised, 42.5% gave a history of street shaves and 24% had their ears pierced. Vertical transmission was not noted. Blood borne infection was not found only in 9.3% of hepatitis C.

Conclusion: World wide vertical transmission is considered the usual mode of transmission for hepatitis B and blood transfusion for hepatitis C. Local studies previously showed blood transfusion, use of indisposed syringes and injection drug use as the main risk factor for transmission of hepatitis C in our population. Ignorance in general and especially about health matters in crux of the problem. It is need of the hour to take heroic measure to limit spread of hepatitis B & C.

Key Words: Hepatitis B & Hepatitis C

Introduction

The figures of world population being diagnosed as hepatitis B or C positive are touching mammoth proportions. It is estimated that more than one third of the world's population has been infected with the hepatitis B virus. About 5% of the population is chronic carrier of HBV, and nearly 25% of all carries develops serious liver disease such as chronic hepatitis, cirrhosis and primary hepatocellular carcinoma. HBV infection causes more than one million deaths every year.^{1,2,3}

WHO estimates that about 170 million people, 3% of world's population, are infected with HCV. About 80% of newly infected patients progress to develop chronic infection. Cirrhosis develops in about 10% to 20% of persons with chronic infection, and liver cancer develops in 1% to 5% of persons with chronic infection over a period of 20 to 30 years. The prevalence of HCV infection in some countries of Africa, the Eastern Mediterranean, South-East Asia and the Western Pacific (When prevalence data are available) is high compared to some countries in North America and Europe.^{1,2,3}

Prevalence of infection modes of transmission of hepatitis B & C and human behavior conspire to mold geographically different epidemiologic

patterns.^{4,5,6} Spread of hepatitis B virus is either by the intravenous route (e.g. by transfusion of infected blood or blood products, or by contaminated needles used by drug addicts, tattooists or acupuncturists), or by close personal contact, such as during sexual intercourse particularly in male homosexuals. Vertical transmission from mother to child during parturition or soon after birth is the usual means of transmission world-wide. There is no evidence that hepatitis B replicates in insect vectors but the virus has been detected in mosquitoes and bed bugs. Serologic evidence for hepatitis C infection occurs in 90% of patients with a history of transfusion associated hepatitis and injection drug users. As blood borne infection hepatitis C virus potentially can also be transmitted sexually and perinatally however both of these modes of transmission are inefficient for hepatitis C and chances of transmission have been estimated to be approximately 5%.

Material and Methods

Objectives:

My study aims to analyze the risk factors of transmission of hepatitis B& C in Pakistani population, compare these with local and inter-

national statistics to see whether the worldwide modes of transmission had the same proportions in our population. This was a descriptive study and was carried out at Mayo hospital Lahore, affiliated with King Edward Medical College Lahore, Pakistan. The study duration was one year. One hundred consecutive cases of chronic liver disease that fulfilled the inclusion criteria were included by nonprobability sampling technique.

The inclusion criteria were

1. Patients already diagnosed as a case of decompensated liver cirrhosis due to hepatitis B or C infection evident on abdominal ultrasound and admitted to the hospital with ascites, encephalopathy or upper gastrointestinal bleeding.
2. Patients whose hepatitis B or C positive status was confirmed by positive ELISA for either hepatitis B surface antigen or anti hepatitis C virus antibodies.

The exclusion criteria were

1. Patients diagnosed as a case of decompensated liver cirrhosis due to causes other than hepatitis B or C infection evident on abdominal ultrasound and admitted to the hospital with ascites,

encephalopathy or upper gastrointestinal bleeding.

2. Patients whose hepatitis B or C positive status was not confirmed by positive ELISA for either hepatitis B surface antigen or anti hepatitis C virus antibodies.

The data was collected by inquiring about the risk factors of transmission from the patients or their first degree relative. The data was collected on a proforma. Then it was analyzed and percentages of mode of transmission were determined separately for hepatitis B & C.

The data was entered and processed using SPSS version 10.0. The percentages for each mode of transmission were calculated from the total number separately for hepatitis B & C.

Results

Total number of patients included in the study was 100

Total number of hepatitis B patients was 20

Total number of hepatitis C patients was 80

Total number of male patients was 60

Total number of female patients was 40

Discussion

The results of my study show that risk factors which

Table 1: Statistical Analysis of Risk Factors Attributed to Transmission

Risk Factor	% of Hepatitis B Patients Exposed	% of Hepatitis C Patients
Exposed		
Blood transfusion	2.5	19.2
Unprotected sexual contact	0	0
Vertical transmission	10	15.38
Injection drug use percutaneous transmission	0	0
(A) Accidental needle stick injury	2.5	0
(B) Acupuncture	0	0
(C) Tattooing	2.5	1.8
(D) Body piercing get barbers	0	80.76
(E) Shave from street barbers	65	0
(F) Treatment from street dentists	0	3.8
(G) Surgery	2.5	3.8
(H) Circumcision	95	0
Organ Transplantation	0	0
Haemodialysis	0	0

Table 2: Statistical Analysis of Risk Factors Attributed to Transmission

Risk Factor	% of Hepatitis B Patients Exposed	% of Hepatitis C Patients Exposed
Blood transfusion	0	9.3
Unprotected sexual contact	0	1.8
Vertical transmission	0	13
Injection drug use percutaneous transmission	0	0
(A) Accidental needle stick injury	0	1.8
(B) Acupuncture	0	0
(C) Tattooing	0	1.8
(D) Body piercing	50	24
(E) Shave from street barbers	0	1.8
(G) Surgery	10	1.8
(H) Circumcision	30	63
Organ transplantation	0	0
Haemodialysis	0	0
Unidentified/others	5	1.8

appear to be the main epidemiological factor both for hepatitis B and C.

Fifty percent of hepatitis B patients had undergone body piercing (ear piercing mainly), 30% had undergone circumcision and 2.5% had their beard shaved by street barbers throughout their lives. Similarly 63% patients of hepatitis C had been circumcised, 42.5% gave a history of street shaves and 24% had their ears pierced so percutaneous exposure can be suspected very strongly in about more than 95% of patients included in the study. Vertical transmission which is recognized as the most common risk factor for transmission of hepatitis B was found negative in all hepatitis B patients and positive in 13% patients of hepatitis C. Blood borne transmission, the main risk factor for hepatitis C was found only in 9.3 of hepatitis C patients.

On comparing the results for the two genders it was analyzed that the main risk factors in males was circumcision (95%) and shave from street barbers (65%) whereas in females ear piercing (80.76%) and blood transfusion ((19.2%) were identified as the major predisposing factors of transmission.

Worldwide vertical transmission is considered the usual mode of transmission for hepatitis B and blood transfusion for hepatitis C (more than 90% of

cases).^{1,2} The statistics for USA released in the 90s by the centre for disease control show that 41% percent of people get hepatitis B by the sexual transmission and 15% by injection drug use. Similarly for hepatitis C 60% transmission is by injection drug use and 15% by sexual route.⁴ Local studies done previously in Pakistan show blood transfusion, use of indisposed syringes and injection drug use as the main risk factors for transmission of hepatitis C transmission in our population.^{9,10,11,12} These variations correspond to geographical variability within the country.

Many geographical, socioeconomic, religious and social factors are responsible for revealing such trends of transmission in Pakistani population. Ignorance in general and especially about health matters both on the part of people who are the sufferers and the spreaders is the crux of the problem. In addition to ignorance malpractice on the part of people running street shops including street barbers, dentists, surgeons, dais and ear piercers by not using proper sterilizing techniques for instruments and reusing the same district and city hospitals making people being transfused in the periphery prone to blood borne infection. Being a Muslim country sexual malpractices and injection drug use are less common and lack of transplant and dialysis facilities makes

these risks negligible in our country.

It is the need of the hour to take heroic measures to limit the spread of hepatitis B & C. The government and health authorities need to start a massive public awareness campaign to make the masses aware of the facts how these lethal disease are transmitted. Electronic and print media can play a pivotal role in it. At the same time street barbers,

dentists and ear piercers should be registered with the local health authorities so that they follow a safety protocol. Blood screening facilities need to spread out to every nook and corner of the country.

*Department of Medicine
Mayo, Lahore.*

Theesculapio@hotmail.com

References

1. World Health Organization. {Homepage of World Health Organization} {online} 2000 Oct last update. {Cited 2004 Nov 04}. Available from: URL: [Http://www.who.int/en/](http://www.who.int/en/)
2. Hollinger FB, Liang TJ. Hepatitis B virus. In: Knipe DM. Fields Virology. 4th ed. Philadelphia: Lippincott Williams & Wilkins 2001; 2971-3036.
3. Robinson WS. Hepatitis B viruses. General Features (human). In: Webster RG, Granoff A. Encyclopedia of virology. London: Academic Press 1994; 554-69.
4. Centers for Disease control and prevention. [Homepage of Centers for diseases control and prevention] [online] 2003 May last update. [cited 2004 Nov 02]. Available from: [URL:http://www.cdc.gov/](http://www.cdc.gov/)
5. Alter MJ. Epidemiology of hepatitis B in Europe and worldwide. J Hepatol 2003; 39S64-S69.
6. Alter MJ, Hutin YJF, Armstrong GL. Epidemiology of hepatitis C. In: Liang TJ, Hoofnagle JH. Hepatitis C. Boston: Academic Press 2000; 244-49.
7. Burroughs AK, Westaby D. Liver, biliary tract and pancreatic disease. In: kumar P, Clark M. Kumar & clark clinical medicine. 5th ed. London: Bath press limited 2002; 353-56
8. Diestag JL, isselbacher KJ. Acute viral hepatitis. In: Braunwald E, Fauci AS, Kasper DL, Hauser SL, longo DL, Jameson JL. Harrison's Principles of internal medicine. 15th ed. New York: The McGraw-Hill 2001; 1728-30.
9. Khokhar N, Raja KS, Javaid S. Seroprevalence of hepatitis C virus infection and its risk factors in pregnant women. J Pak med Assoc 2004; 54 (3): 135.
10. Shaikh mA, sheikh WM, Solangi A, Abro H. Frequency and transmission mode of hepatitis C virus in northern Sindh. J Coll physicians Surg Pak 2003; 13 (12) :691-93.
11. Ryas M, hussain T, Bhatti FA. Ahmed F, Tariq WZ, Khattack MF. Epidemiology of hepatitis C virus infection in blood donors in northern Pakistan. J Rawal Med Coll 2001; 5 (2): 56-9.
12. Shah FU, Salih M, Malik IA, Hussain I. Increasing prevalence of chronic hepatitis and associated risk factors. Pak J Med Res 2002; 41 (2): 46-50.