DEMOGRAPHIC DIFFERENCES IN THE SEROPREVELANCE OF CO-INFECTION OF HCV & HBV IN HIV PATIENTS IN PESHAWAR

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ABSTRACT

Objective: To determine the demographic differences in the sero prevalence of hepatitis C, hepatitis B co-infection in HIV positive patients in Peshawar.

Materials & Methods:Inthis descriptive cross sectional study, a total of 139 HIV patients, who were registered at the Family Care Centre HMC were enrolled to determine the seroprevalence of hepatitis B, hepatitis C co-infection in HIV&the demographic differences present. Blood was obtained from each patient for serological testing ofHBV & HCV, in addition liver function tests were also performed.

Results: Diagnosis of HIV among 139 patients was analyzed as 11 (8%) patients had elisa, 1 (1%) patients had elisa/ PCR, 108 (78%) patients had elisa/rapid, 1 (1%) patients had elisa/WB, 2 (1%) patients had PCR, 2 (1%) patients had PCR/ rapidCo infection among 139 patients was analyzed as 19(14%) patients had HBV positive, 22(16%) patients had HCV positive and 3(2%) patients had positive pulmonary tuberculosis.

Conclusion:Due to the common modes of transmission the HIV positive patients our part of the region are at a much higher risk of acquiring co infections with HBV and HCV. Therefore the positive HIV patients must be routinely tested for markers of HBV/HCV tohelp in their timely diagnosis and prompt treatment.

Key words: Human immunodeficiency virus (HIV), Acquired immunodeficiency syndrome (AIDS), Hepatitis B virus(HBV), Hepatitis C virus (HCV).

INTRODUCTION

The HIV transmitted through blood and body fluids affects the body's immune system eventually causing AIDS. Later on patients start suffering from opportunistic infections e.g Hepatitis B, hepatitis C and tuberculosis(1). HIV is a member of the genus Lentivirus, part of the family Retroviridae(2,3). Whichare transmitted as single-stranded, enveloped RNA viruses(4). The immune deficiency of the cells produced by the HIVinfection is characterized by the depletion of helper T lymphocytes (CD4+ cells) (5,6).

Hepatitis B infection is considered as a global healthcare issue, specifically common in developing areas. The mode of transmission of hepatitis B virus (HBV) is mostly through the body fluids like semen, blood, and secretions of the vagina(7).

Hepatitis B virus (HBV) is a hepadnavirus, its virion consists of a 42-nm spherical, double-shelled particle that exists as small rods and spheres which is 22 nm wide on an average.(8).

Causative agent for Hepatitis C infection is the hepatitis C virus (HCV) which attacks the liver and causes inflammation. About 3% of the world's population has been infected with HCV according to the World Health Organization (WHO) and there are about more than 170 million chronic carriers that are more prone to develop cirrhosis and/or cancer of liver (9).

Transfusing blood which was contaminated with HCV in the past was considered to be an important mode of transmission. However since 1990, screening of the blood for HCV antibody before donation has reduced the risk of transfusion-related infection of HCV bringing it down to minimum of 1 case in upto 103,000 units transfused(10). With usage of highly sensitive detection assays, e-g polymerase chain reaction (PCR),the high risk of infection of HCV due to transfusions of contaminated blood has been estimated as 1 in 230,000 blood donations (11).Coinfection of HCV with human immunodeficiency virus (HIV) type 1 increases the risk of transmission of HCV from mother to fetus and through sexual activity. Household casual contact or contact with saliva of infected person are not efficient routes of disease transmission. In about 10% of cases no factors of risk are identified (12).

The route of transmission for both HIV and HBV infections is through blood and unsafe sexual activity. 90-95% of AIDS patients had serological evidence of present or past HBV infection (13).The HCV infection is also transmitted through parenteral routes and co-infection with HIV are common among intravenous drug

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users (IVDU) or blood transfusion(14).

MATERIAL & METHODS

A descriptive cross sectional study was conducted at theFamily Care Centre HMC, from November2013 to April 2014, to view the demoghraphic differences in the seroprevalence of HBV & HCV coinfection in HIV patients.The study was approved by the Ethical committee of Khyber medical college & that of the HMC. For collection of specimens permission was taken from Head of Family Care Centre, HMC, Peshawar.

The study population included 139 HIV positive patientsusing 90% prevalence of HBS in HIV patients, with 95% confidence level and 5% margin of error, under WHO software for sample size determination, registered at the Family Care Centrewith a history of IntraVenous Drug Use(IVDU) or blood transfusion were included in the study while HIV patients with vertically transmitted disease(<16yrs.) were excluded from the study.

Aims and objectives were explained to the subjects. Informed consents were obtained from each subject for participation in this study.5ml Blood was collected in disposable syringe from subjects by aseptic techniques for serological tests of HBVand HCV,using double disposable gloves and mask for extra protection. The samples were obtained and processed by using standard methods.The liver function tests, alkaline phosphatase, alanine and aspartate aminotransferase was also be performed simultaneously.A detailed history regarding the demographic characteristics of the participants was recorded in a preformed proforma.

For the statistical analysis computer software SPSS version10.0 was used. Mean and standard deviation were computed for numerical variables like age, ALKP, ALT, AST. Frequency and percentages were computed for categorical variables like gender, Occupation, HIV diagnosis, marital status, family history of HIV, education level, HIV exposure, members substance abuse, history of STDs, co-infections.

RESULTS

As shown in Pie chart, the agedistribution among 139 patients was analyzed as 49(35%) patients were in age range 20-30 years, 46(33%) patients were in age range 31-40 years, 26(19%) patients were in age range 41-50 years, 18(13%) patients were in age range 51-60 years. Mean 37.0432 and SD ± 1.134.Gender distribution among the patients was analyzed as 45(32%) were male patients and 94(68%) were female patients as shown in Table1.Table 2 shows the Occupation of the patients 15(11%) patients were employees, 15(11%) patients were shopkeepers, 10(7%) patients were students/ teachers, 44(32%) patients were house wife, 5(3%) patients were formers, 50(36%) patients were servants.Marital status among 139 patients was analyzed as 78(56%) patients were married, 56(40%)

Table 1:

Gender	Frequency	Percentage
Male	45	32%
Female	94	68%
Total	139	100%

Table 2:

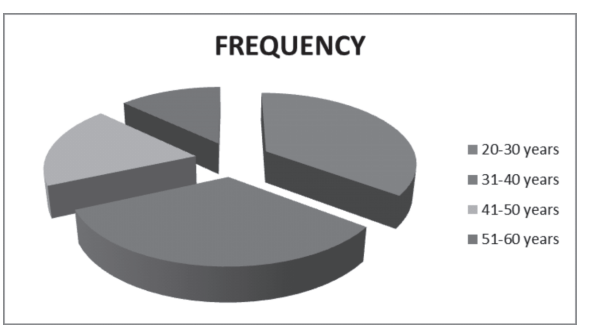
Occupation	Frequency	Percentage
Employees	15	11%
Shopkeepers	15	11%
Student/ teachers	10	7%
House wife	44	32%
Formers	5	3%
Servants	50	36%
Total	139	100%

Table 3:

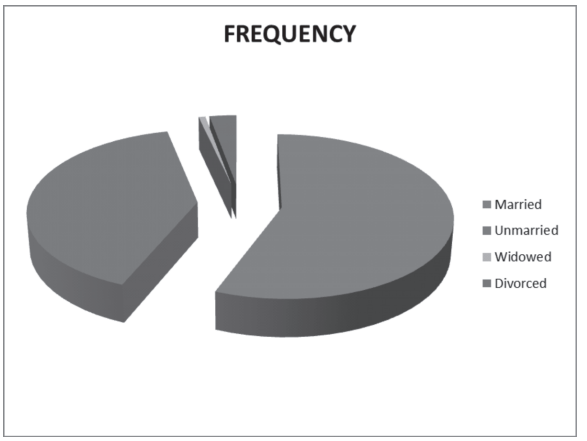
Education level	Frequency	Percentage
Illiterate	90	65%
Primary	28	20%
Secondary	15	11%
Graduate	6	4%
Total	139	100%

Table 4:

Co infection	Frequency	Percentage
HBV	19	14%
HCV	22	16%
Pulmonary tuberculosis	3	2%
None	95	68%
Total	139	100%



Pie Chart no.1:



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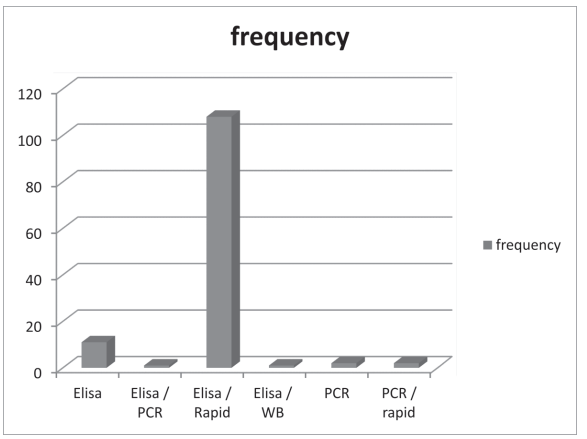

Bar chart:

patients were unmarried, 1(1%) patient was widow, 4(4%) patients were divorced as shown in Pie chart 2.

Education level among 139 patients was analyzed as 90(65%) patients were illiterate, 28(20%) patients had primary education, 15(11%) patients had secondary education, 6(6%) patient were graduate. as shown in table 3.

Diagnosis of HIV among 139 patients was analyzed as 11 (8%) patients had elisa, 1 (1%) patients had elisa/PCR, 108 (78%) patients had elisa/rapid, 1 (1%) patients had elisa/WB, 2 (1%) patients had PCR, 2 (1%) patients had PCR/ rapid, as shown in the Bar chart.

Table 4 shows the Co infection among 139 patients was analyzed as 19(14%) patients had HBV positive, 22(16%) patients had HCV positive and 3(2%) patients had positive pulmonary tuberculosis.

DISCUSSION

Human immunodeficiency virus (HIV) which is blood borne &is typically transmitted through sexual contact, sharing of intravenous drug materials, and mother-to-child transmission (MTCT), which may occur during childbirth process or during lactation(1). The immune deficiency of the cells produced by the HIVinfection is characterized by the depletion of helper T lymphocytes (CD4+ cells)(5,6,7) . This loss of CD4 cells leads to the development of neoplastic processes and opportunistic infections(15).According to Western studies up to 90% of AIDS patients had abnormal liver enzymes (16). Etiological factors were multiple like infections, neoplasms and medications(17). In persons co-infected with HBV/HCV tend to be having liver injury in a more severe form with high probability of developing cirrhosis of liver, deranged LFTs and incidence of carcinogenic changes in liver are more as compared to those patients who have monoinfection.

A study conducted by Badridze N et al. showed the participants were mostly males (71.4%),range of age of HIV positive patients varied from 20 years to 77 years old(18) while in this study Our study shows that mean age was 37.0432 years with SD ± 1.134. Male patients were 32% while 68% of them were females. In this study,Eleven percent patients were employees, 11% patients were shopkeepers, 7% patients were students/ teachers, 32% patients were house wife, 3% patients were formers, 36% patients were servants.In a study conducted byDomkam et al.,HCWs in private health facilities were more infected compared to those in public health facilities 5.00% vs 1.40% ($p = 0.028$); OR = 3.7 (95% CI: 1.01-12.90)(19).

A study conducted byKalichman SC showed that among individuals with HIV infection who live in the US, poor literacy skills have been associated with worse HIV knowledge (20),Similarly in this studyeducation level among 139 patients was analyzed as 90(65%) patients were illiterate, 28(20%) patients had primary education, 15(11%) patients had secondary education, 6(6%) patient were graduate.

Co infection among 139 patients was analyzed as 19(14%) patients had HBV positive, 22(16%) patients had HCV positive and 3(2%) patients had positive pulmonary tuberculosis.

Similar results were found in another study conducted by in which the seroprevalences of HCV,HIV and HBV antigen were 60%, 24% and 6%, respectively and the Co-infections of HIV/HCV were specifically very raised i-e 20% (21).In another study conducted in 2007 at Bolan Medical College Quetta and Aga Khan University Karachi on co-infections and seroprevalences of HCV,HBV and HIV in injecting drug users in Quetta Pakistan concluded that the seroprevalences of HCV,HIV and HBV antigen were 60%, 24% and 6%, respectively and the Co-infections of HIV/HCV were specifically very raised i-e 20%(22).

Our study results were quite similar to a South Indian research study where (6.4%) of HBsAg positive and (2.1%) positive HCV antibody in positive HIV patients was demonstrated (23).Other similar study carried out in Maharashtra the state which has a very

high rate of prevalence of HIV infection, 5.6% and 25.8% prevalence of HCV and HBV was detected in positive HIV patients(24). (Tankhiwale SS et al., 2003).

According to Jump up et al.up to 90% of AIDS patients had abnormal liver enzymes, as in this study 78% had ALT ≤ 45 IU/L & 22% >45IU/L& AST was ≤ 40 IU/L in 93% while > 40IU/L in 7%.In case ofALKP 63% had ≤ 120 IU/L & .120IU/L in27%(16).

CONCLUSION

Our study concludes that due to the common modes of transmission the HIV positive patients our part of the region are at a much higher risk of acquiring co infections with HBV and HCV. Therefore the positive HIV patients must be routinely tested for markers of HBV/ HCV to help in timely diagnosis and prompt treatment of these patients that will improve their prognosis and will in turn help in decreasing the spread of these viral chronic infections further.

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