



Seroprevalance of Hepatitis B and Hepatitis C Virus Infection among HIV Positive Individuals from Tertiary Care Hospital in Allahabad District of North India

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ABSTRACT

The study was designed to assess the hepatitis B virus and hepatitis C virus prevalence in HIV infected patients in tertiary care hospitals. A cross sectional study of prevalence and risk factors of HBV and HCV co-infection in HIV patients was conducted. A total of 1716 patients of all ages enrolled for ART Therapy at ART centre were screened for the presence of HBs Ag and anti-HCV antibodies by ELISA technique. In 1716 HIV infected patients, 56(3.26%) were positive for HBV and 16(0.9%) for HCV and 1(0.05%) was positive for dual co-infection (HBV/HCV). Heterosexual contact were the acquisition of HBV/HIV co-infection in 75% of patients and other modes like MSM 1.78%, Injective drug users 5.35%, Blood transfusion 1.78%, Mother to child 3.57%, Probable unsafe injection 1.4%, unknown 8.92%, commercial sex worker 0% while in HCV/HIV co-infection 50% acquisition is by heterosexual contact and second most common risk factor was injective drug users 43.7% in seropositive patients. The principal routes for HIV transmission are similar to HBV and HCV infection. In our study the heterosexual contact and Injective drug users were found to be major risk groups. The prevalence of HBV and HCV is low among HIV patients in Allahabad as compared to other studies of North India. However it would be advisable to screen for these viruses in all the HIV infected individuals and their sexual partners at the earliest.

Key words: Seroprevalence, HBV, HCV, HBV HCV India, co-infection, HIV.

INTRODUCTION

Human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) are major public health concerns, because of shared

routes of transmission, HIV-HCV co-infection and HIV-HBV co-infection and/or both common^(1,2). Co-infections of HBV and HCV in HIV positive patients are associated with reduced

survival and an increased risk of progression to severe liver diseases with higher susceptibility towards hepato-toxicity due to anti-retroviral therapy⁽³⁾. The rate of progression and complications from viral Hepatitis was reported to be accelerated in HIV infected patients^(4,5) and HIV infected persons were shown to be six times more likely to develop chronic Hepatitis if they were infected with HBV, compared to HIV negative persons⁽⁶⁾.

The data from western studies reveal the incidence of HBV co-infection in HIV patients as 9-12%⁽⁷⁾ & HCV co-infection as 9-16%⁽⁸⁾. The prevalence of co-infection in HIV patients in India may be different as the mode of transmission and the load of infection in the population affect this^(9,10). In a study done by in Southern India HBV co-infection were detected 5.5% patients and HCV and co-infection in 4.4% patients⁽¹¹⁾. Thus expert guidelines developed in the United States and Europe recommend screening of all individuals infected with HIV for infection with HCV and HBV to help inappropriate management of such patients. In developing countries like India, no such uniform guidelines are available. Moreover literature regarding the prevalence of HIV co-infection with HBV &/or HCV in India is sparse. Thus the present study with a large sample size, was undertaken to detect the current seroprevalence of HBV&/or HCV co-infection in patients infected with HIV in Allahabad & the adjoining areas.

The present study was undertaken with the objective to assess the presence of HBV and HCV co-infection in HIV infected patients of a tertiary care centre of northern India.

MATERIALS & METHOD

Design of study: Hospital based cross sectional study conducted at centre of tertiary care hospital of Allahabad. The study was conducted in the period of Aug 2013 to July 2015.

Study Population: The sample for study was collected ART centre where consecutive patients enrolled into HIV care over 24 month's period

were included in the study population. All subjects were confirmed HIV patients over 18 months of age, and not pregnant if female subjects. Those excluded from the study were, children less than 18 months of age (when HIV antibody screening test are unreliable), Pregnant women who were seen in Obstetrics and Gynecology department status under the PPTCT programme, and those whose HIV status was yet to be confirmed. 1716 consecutive HIV positive patients comprising 1103(64.3%) were males, 711(41.4) were females, 4(0.23%) TG, 76(4.43%) Male child, 43(2.5%) Female child referred from ART centre in Allahabad and adjoining areas.

Sampling

In this study, the serum samples from confirmed HIV-positive patients was sent to the serology lab of the Department of Microbiology for screening of HBs Ag and anti-HCV by ELISA according to the manufacturer's instructions.. A detailed history and clinical examination were performed. The history mainly included age, sex mode of transmission, education status, history of smoking, alcohol intake, occupation and socioeconomic status.

Detection of HBs Ag (Surface antigen of HBV)

Micro-well ELISA for the detection of Hepatitis B surface antigen (HBs Ag) in Human serum / Plasma is used to detect HBs Ag in the HIV positive blood samples under study.

Detection of Antibodies to Hepatitis C virus

Micro-well ELISA for the detection of antibodies of Hepatitis C virus in human serum / plasma is used to detect antibodies to Hepatitis C virus in the HIV positive blood sample under study.

Statistical analysis:- The retrospective demographic data was collected and then the data was analyzed using the SPSS software 16.0 version.

RESULTS

We received 1716 HIV positive samples from the ART Clinic during the 2 year study period. The percentage of male patients was 64% (1103 /1716) as compared with 41%(711 /1716) for

female patients, thus the male : female ratio of the study group was 1.6 : 1. Their age ranged between 02-60 years with a mean age of 34.25 years with men 36.62 and 31.23 female. Overall , (Table1) the prevalence rates of co-infection of HBs Ag and Anti HCV antibodies and both Hbs Ag and anti-HCV in HIV positive patients were 3.27% (56/1716), 0.87% (16/1716) and 0.5% (1 /1716). Table 2 shows the distribution of HIV +HBV,

HIV+HCV and HIV+HBV+HCV co-infections by age and gender in the study group. Figure 1 shows that heterosexual contact were the acquisition of HIV/HBV co infection in 75% of patients and other modes like MSM -1.78%, injective drug users 5.35%, Blood transfusion 1.78%, Mother to child3.57%, probable unsafe injection 1.4%, unknown 8.92%, Commercial sex worker 0%.

Table 1: Prevalence of HBV and HCV co-infection in HIV positive patients

Total No. of HIV Patients=1716	HIV+HBV	HIV+HCV	HIV+HBV+HCV
1716	56	16	1
Percentage	3.26%	0.93%	0.05%

Table 2: The distribution of HIV +HBV, HIV+HCV AND HIV+HBV+HCV co-infections by age and gender in the study group.

Age(yrs)	HIV+HBV		HIV+HCV		HIV+HBV+HCV	
	Male	Female	Male	Female	Male	Female
02-16 yrs	1	1	0	0	0	0
17-24 yrs	5	0	2	0	0	0
25-34 yrs	5	6	6	1	1	0
35-44 yrs	17	4	3	1	0	0
45-60 yrs	10	7	2	1	0	0
Total	38	18	13	3	1	0

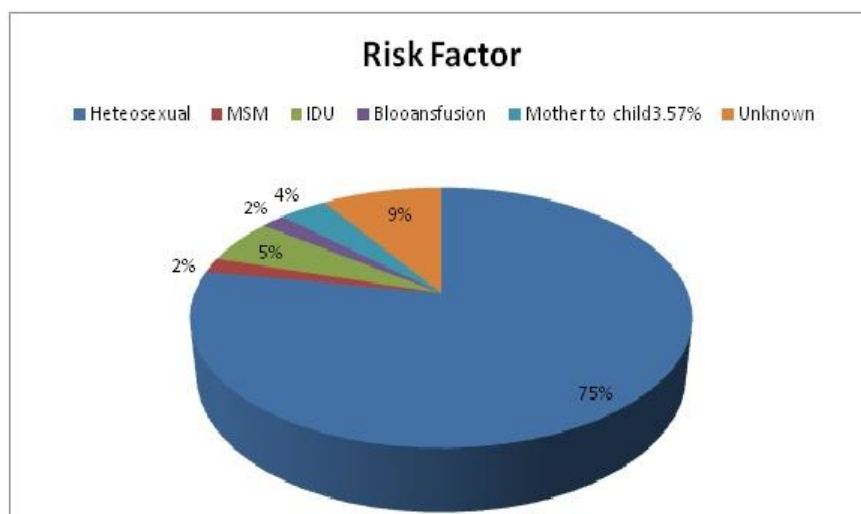


Fig 1: Mode of Transfer of HIV-HBV Co-Infection

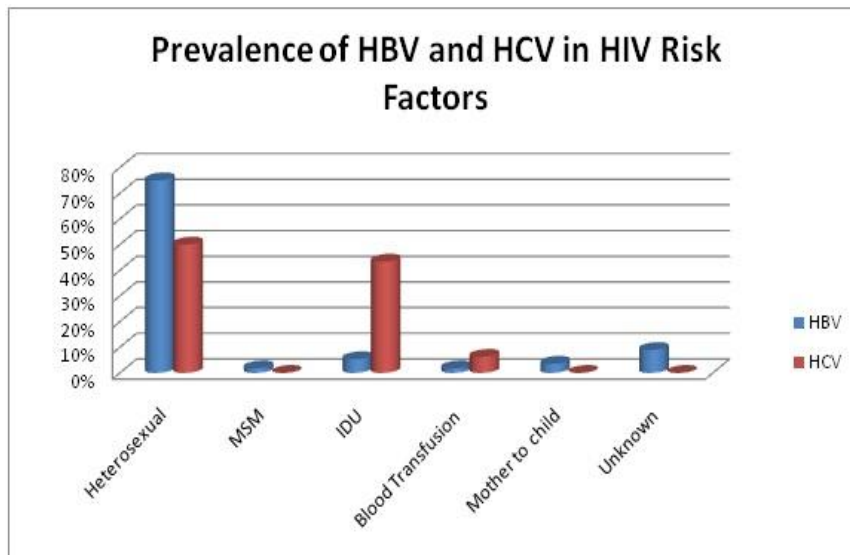


Fig 2: Prevalence of HBV and HCV in HIV risk factors

DISCUSSION

HIV is responsible for about 40 million chronic infections while Hepatitis C and HBV cause 130 million and 370 million chronic infections respectively ⁽³⁾. The prevalence of Hepatitis B virus and Hepatitis C Virus infection varies from country to country and depends upon a complex mix of behavioral, environmental and host factors. In general it is lowest in countries or areas with high standards of living (e.g. Australia, North America, and North Europe) and highest in countries or areas with low status (e.g. South America, China, Asia, South America and Africa ⁽¹²⁾. It is estimated that one third of deaths in HIV patients are directly or indirectly related to liver diseases ⁽³⁾.

The prevalence of HBV and HCV co-infection in HIV patients has been variably reported in various studies. Our study showed male predominance (67.8%) amongst HIV infected patients, which was much in concordance with other studies (65.5%, 62%) showing that male subjects are significantly at high risk of developing HBV/HCV co-infection ^(13,14).

The prevalence of co-infection with HIV varies widely in different studies within India and outside. In a study in Agra (UP), Northern India, prevalence of HBs Ag and anti-HCV antibodies was 1.7% and 1.1% respectively which is very

low. Data from the present study observed little higher findings with HBV co-infection, with prevalence rate of 3.27% and HCV –HIV infections was 0.9% of different risk factors considered in our study, history of the various sexual contact with a HIV positive person accounted for 75% in HBV-HIV co-infection and 50% in HCV-HIV co-infection. Among the HBV-HIV co-infection, the prevalence was higher in the 35-60 years age group (67.8%) and in HCV-HIV co-infection the prevalence was higher in the 25-45 years age group (68.7%). Sexual behavior (75%) was found to be the commonest risk factor in both co-infection but in our study injective drug users (43.7%) were the second most common mode of transmission in HCV-HIV co-infected patients because of the increasing rate addiction in our countries. In HBV-HIV co-infected patients 76% were married males of 35-44 years age group and 5% unmarried while in HCV-HIV co-infected patients 62% are married 25% unmarried. Prevalence of HBV/HCV co-infection in unmarried females was 0% which shows married males is predominantly transmitting the co-infection to their spouse. Our study also recorded 0.05% prevalence of both HBV and HCV in HIV positive patients which is very low. In the similar study conducted in another medical university, of north India, the prevalence rate reported was

2.25% HBV co-infection , 1.61% HCV co-infection and 0.16% had dual co-infection i.e both HBV/HCV in HIV positive patients ⁽¹⁵⁾.

CONCLUSION

A low seroprevalence of HBV and HCV is associated with HIV infection in Allahabad District, Eastern U.P. The study demonstrated that the infection is significantly transmitted by sexually active married male group. Among the risk factors, sexual behavior was highly associated with the transmission of these three viruses and injective drug users are the second most common risk factors in HCV infection. Therefore HBV and HCV testing should be included in the protocol of all HIV treatment centers but more stress should be on the knowledge of these sexually transmitted infections in female population. Even in resource limited settings in order to reduce morbidities and mortalities from liver diseases amongst HIV positive patients.

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