



Research article

SEROPREVALENCE OF HEPATITIS 'B' CO-INFECTION AMONG HIV INFECTED PATIENTS IN GOVERNMENT MEDICAL COLLEGE, KOTA AND ASSOCIATED HOSPITALS

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ABSTRACT

Introduction Human immunodeficiency virus (HIV) shares routes of transmission with Hepatitis B virus (HBV), so HIV patients have more chance to get co-infected with HBV and this type of concurrent infection with both viruses may alter the disease progression, natural history and treatment response. **Material & Method** The study was carried out at the Integrated Counselling and Testing Centre (ICTC) of Department of Microbiology, MBS Hospital, Government Medical College, Kota. The present study included 100 patients, diagnosed as HIV positive. **Results** Among the 100 HIV positive patients we found 35 patients co-infected with HBV. Among the 100 cases of HIV, 65 (65%) were male, 34 (34%) were female and 1 (1%) was intersexual. In HIV +HBV co-infected cases 22 (62.8%) were male and 13 (37.1%) were female. Of the 100 HIV patients most were married 73 (73%) followed by unmarried 16 (16%), widow 7 (7%), separate 4 (4%). Among HIV+HBV co-infection most was married 28 (80%) as compared to separate 3 (8.5%), unmarried, 2 (5.7%) and widow 2 (5.7%). Among the HIV patients route of transmission was mainly sexual 69 (69%).

Keywords: Human immunodeficiency virus, Hepatitis B virus, Integrated Counselling and Testing Centre, Co infection

INTRODUCTION

Human immunodeficiency virus (HIV) is a lentivirus (a member of the retrovirus family) that causes acquired immunodeficiency syndrome (AIDS), and Hepatitis B virus (HBV) is Hepadnavirus which cause hepatitis and hepatocellular carcinoma. As both viruses share routes of transmission, HIV positive patients have a high probability to get co-infected with Hepatitis B virus (HBV).¹⁻⁴

In HIV positive patients liver disease is one of the leading causes of morbidity and mortality. The development of highly active antiretroviral therapy (HAART) in 1996 has completely modified the pattern of hepatic events in HIV infection, and the liver is now one of the most important organs to

consider when treating HIV-infected patients as approximately one-third of the deaths of patients with HIV infection are in some way related to liver disease.^{4,5,6}

In HIV positive patients, concurrent infection with Hepatitis B viruses may alter the natural history and treatment response of both diseases. In particular those patients who are receiving antiretroviral therapy (ART) Hepatitis B Virus (HBV) have become major risk factors which are associated with an increase in mortality.

HIV alters the disease progression of HBV by an increase in persistence of HBV, increase in HBV viral load and increase in the incidence of HBV reactivation and reinfection.^{3,7} Thus the natural

course of acute HBV infection may be altered in the presence of HIV infection, with a lower incidence of icteric illness and lower rates of spontaneous clearance of HBV. Chronic HBV infected patients with HIV shows lower rates of clearance of the hepatitis B e antigen (HBeAg) and higher levels of HBV DNA. On the other hand, most of studies shown that HBV does not play a significant role in the progression of HIV infection to AIDS.^{1, 8,9,10}

The present study is conducted to check seroprevalence in population to appraise the immensity and effect of disease transmission and for its prevention and control.

MATERIAL & METHOD

The study was carried out at the Integrated Counselling and Testing Centre (ICTC) of Department of Microbiology, MBS Hospital, Government Medical College, and Kota. From the period from July 2012 to Feb 2014. The present study included 100 patients (n=100) of all age group both male and female, diagnosed as HIV positive as per WHO Testing Strategies III¹¹ (SD Bio line HIV-1/2 3.0, TRIDOT & HIV Comb) at ICTC, Dept. Of Microbiology, MBS Hospital, Government Medical College, Kota. The ethical clearance was taken from ethical committee of Govt Medical College Kota for study purpose.

Serum of 100 HIV positive cases diagnosed at ICTC centre Govt. Medical College Kota by three different testing kits mentioned above were subjected for Hepatitis B surface antigen (HBsAg) by SD Bio line HBsAg rapid test and confirmed by Enzyme-linked immunosorbent assay (ELISA) HBsAg Microscreen™ ELISA Test Kit thereafter.

RESULTS

Among the 100 HIV positive patients we found 35 patients co-infected with HBV (35%) and among them maximum i.e. 13 (37.1%) were in the age group 21-30 years. Fig.1 & 2

Among the 100 cases of HIV, 65 (65%) were male, 34(34%) were female and 1(1%) was intersexual. In HIV+HBV co-infected cases 22 (62.8%) were male and 13 (37.1%) were female. Fig. 3

Of the 100 HIV patients most were married 73 (73%) followed by unmarried 16 (16%), widow 7 (7%), separate 4 (4%). Among HIV+HBV co-infection

most were married 28 (80%) as compared to separate 3 (8.5%), unmarried 2 (5.7%) and widow 2 (5.7%). Fig. 4

Among the HIV patients route of transmission was mainly sexual 69 (69%).

In HIV+HBV co-infected patients route of transmission was also mainly sexual 23 (65.7%), in present study no one found positive in intra-venous drug users (IDUs). Fig. 5

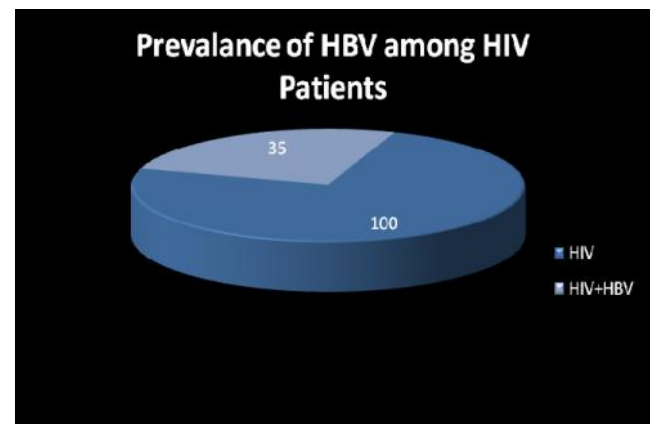


Fig 1. HBV Prevalence among HIV patients

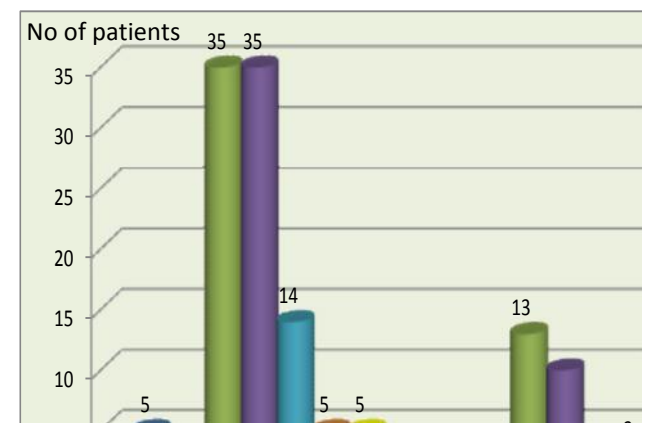


Fig 2: Age Distribution (Year) of patients among HIV and HIV+HBV

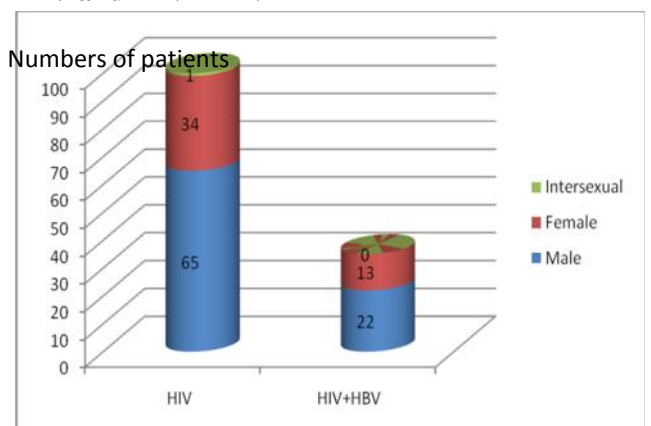


Fig 3: Sex Ratio of HIV and HIV+HBV

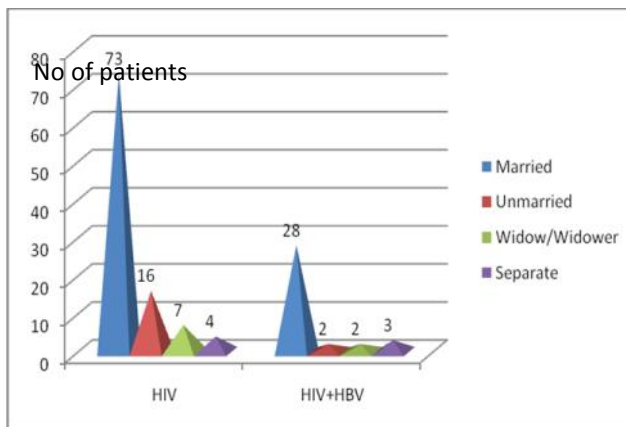


Fig 4: Marital status of HIV and HIV+HBV patients

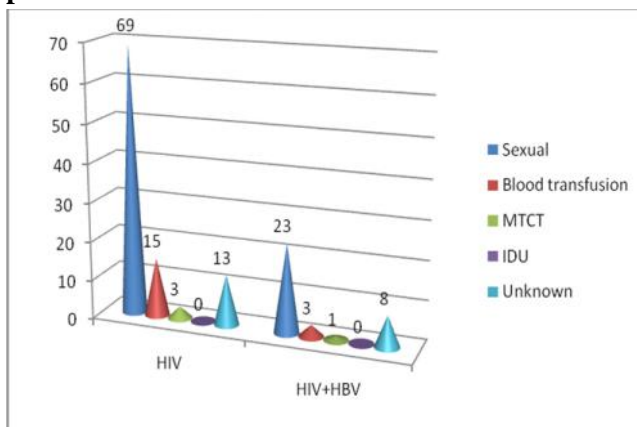


Fig 5: Routes of Transmission in HIV and HIV+HBV patients

DISCUSSION

High risk group people who can acquire HIV infection are also at risk to get other infections which shares the route of transmission. Among them Hepatitis B virus (HBV) infection is easier to acquire because of very low infective dose. There is a high degree of epidemiological similarity between these two viruses (HIV and HBV) in terms of routes of transmission, associated risk factors and the presence of these viruses in various body fluids. With changing trends in treatment with introduction of new drugs, specially in HIV infected patients who acquire various other infections, in their treatment and in treatment of HIV itself with high affinity anti-retroviral therapy (HAART), the liver is the organ which got affected mostly and in person co infected with HBV the condition gets worse so HBV has emerged as a major cause of mortality and morbidity. The present study supports the mandatory practice to screen all the HIV positive patients for HBV. This study is a retrospective study that included 100 HIV positive cases at ICTC, Department of Microbiology,

MBS Hospital, Government Medical College, Kota. In the present study, the age of the HIV patients ranges from 2-70 years with mean age of 34.48 years. The average of the male patients is 34.81 years and of female patients is 34.02 years. This correlates with other studies.^{1,3,4,5}

In this study the maximum numbers of HIV patients were in age group 21-40 yr reflecting that sexually active young adults are affected more. The result of present study correlates with the findings of other similar studies done.^{4,5,7}

The more cases of HIV among younger age groups may be due to their risk behaviours like intravenous drug use, sexual behaviour and exposure to infection like health care workers, accidents etc.

In present study the maximum number of cases of HIV+HBV co-infection were seen in the age group of 21-30 yr {13/35 (37.1%)} followed by 31-40 yr {10/35(28.5%)}. The earlier studies based on the age groups, showed maximum co-infection of HBV in the age group 31-40yr.^{3,4,8} In the present study among the 100 HIV patients 65 (65%) were male, 34 (34%) were female and 1 (1%) was intersexual. Thus, the male: female ratio of the study group was 1.9:1. This is almost similar to the studies.^{1,4,9,10}

Table no-1. In present study HIV+HBV co-infection was predominantly seen in males 22/35(62.8%) than females 13/35 (37.1%). M:F ratio was 1.7:1 which correlates with other study done. Table no-2.

This reflects that HIV, HIV+HBV are most prevalent in males in comparison to females because in India, the majority of the women are in a monogamous relationship with their husbands and usually acquire HIV infection from their spouse and they are generally tested, after the diagnosis of their husbands.

Table 1: Comparison of male: female ratio of HIV patients in other studies:-

Author	Male	Female	M:F
Sud A et al 2001 ¹	56	24	2.3:1
Shazia M Ahsan et al 2002 ¹⁴	130	70	1.8:1
Swati Gupta et al 2006 ³	345	106	3.2:1
Jain A. et al 2007 ⁵	123	42	2.9:1
S. Saravanan et al 2007 ⁴	346	154	2.2:1
SU Munshi et al 2008 ⁷	7	0	7:0
SPD Ponamgi et al 2009 ¹³	915	572	1.6:1
Ataei B et al 2010 ¹¹	128	2	64:1
Present study	65	34	1.9:1

Table: 2. Comparison of M:F ratio of HIV+HBV co infected patients in studies

Author	Male	Female	M:F
Sud A et al 2001 ¹	23	4	5.7:1
Swati Gupta et al 2006 ³	23	1	23:1
S. Saravanan et al 2007 ⁴	39	6	6.5:1
SU Munshi et al 2008 ⁷	5	0	5:0
Padmapryadarsini2006 ¹⁵	46	15	3:1
Present study 2012	22	13	1.7:1

In present study out of 100 HIV patients maximum were married 73/100 (73%) followed by unmarried 16/100(16%), widow 7/100(7%), separate 4/100(4%). In other studies also maximum HIV patients were married. ^{7,12,13,14} HIV+HBV co-infection was maximum in married 28/35 (80%) whereas in separate 3/35 (8.5%), unmarried, 2/35 (5.7%) and widow 2/35 (5.7%). This reflects that HIV, HIV+HBV are common in married persons.

In present study out of 100 HIV-positive cases 35 (35%) are co-infected with HBV. Similar results were found in other study.^{1,2} But a study done by A Pal et al at Kolkata shows very high prevalence of co-infection i.e. 66.67% because in this study HBV is detected by HBsAg and HBV DNA. Other studies show very low seroprevalence of HIV+HBV co-infection Table no-3 and 4.

Table 3: Comparison of co-infection of HBV in HIV cases in various studies in India:-

Author	Place	HIV+HBV
Sud A et al 2001 ¹	Chandigarh	33.8%
S S Tankhiwale et al 2003 ²	Nagpur	30.9%
Swati Gupta et al 2006 ³	New Delhi	5.3%
S. Saravanan et al 2007 ⁴	Chennai	9%
Jain A. et al 2007 ⁵	Delhi	10.7%
Saroj Hooja et al 2012 ⁶	Jaipur	10.5%
Sandhya Sawant et al 2010 ⁸	Mumbai	16.7%
Shazia M Ahsan et al 2002 ¹⁴	Mumbai	3.5%
Padmapriyadarsini 2006 ¹⁵	Chennai	6.4%
A. K. Tripathi et al 2007 ¹⁸	Lukhnow	2.25%
Present Study 2014	Kota	35%

In present study the predominant mode of acquiring HIV infection was sexual contact 69/100 (69%). This correlates with the finding of other similar studies in which the main route of transmission of HIV was sexual transmission. ^{2,3,5,10,12,13} Second most common mode of transmission of HIV in our study was blood transfusion 15/100 (15%) and this is similar to other studies.^{3,10}

Table 4: Comparison of co infection in studies did out of India:-

Author	Place	HIV+HBV
SU Munshi et al 2008 ⁷	Bangladesh	4.24%
C Larsen et al 2008 ¹⁹	France	7%
Modou Jobarteh et al 2010 ²⁰	Gambia	12.2%
Olanisun olufemi Adewole 2009 ²¹	Nigeria	11.5%
Darunee et al 2010 ²²	Bangkok	8.2%
Ataei B et al 2010 ¹¹	Iran	11.5%
Present Study 2012	Kota	35%

In HIV+HBV co-infected patients main route of transmission was sexual 23/35 (65.7%), followed by blood transfusion 3/35 (8.5%), MTCT 1/35 (2.8%), unknown 8/35 (22.8%). Similarly sexual contact was the main route of transmission in HIV+HBV co-infection in other studies done.^{2,5,14-16} As blood is being screened for HIV and HBV before transfusion, so now the main route of transmission is sexual contact for both.¹⁷⁻¹⁹

Due to declining opportunistic infections as a result of highly active antiretroviral therapy (HAART), life expectancy of patients with HIV has increased. In the post-HAART era, with increased survival of HIV infected patients, HBV induced liver disease has emerged as a leading cause of morbidity and death in this population.

There is also evidence that HIV may modify the natural history of HBV infection. HIV positive subjects have higher rates of HBV chronic carriage, higher HBV replication and lower rates of seroconversion to anti-HBe and anti-HBs antibodies. There is a rapid progression of liver fibrosis and an accelerated progression towards decompensated cirrhosis in HIV co-infected subjects.

Hence all HIV positive cases and especially receiving HAART should be screened for HBV.

CONCLUSION

In present study the age groups 21-40ys and 21-30ys are high risk groups among HIV infection and HIV+HBV co-infection respectively. So still it is necessary to make more focus on these age groups to prevent them from acquiring infections by providing education and general awareness about HIV and HBV.

As HIV infected persons who receives HAART and lead a disciplined lifestyle, live longer, but in

HIV+HBV co-infected individuals HBV induced chronic liver disease are becoming more prominent and worsen the condition and an important cause of the increase in mortality among HIV infected patients. So HIV patients should be screened for HBV, which aids in early detection of co-infections and thus initiation of prompt treatment would help to decrease the further progress of these chronic viral infections to liver fibrosis, cirrhosis, liver failure and hepatocellular carcinoma.

Conflict of interest: Nil

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