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Research Article

Prevalence of hepatitis B virus and hepatitis C virus co-infection in human immunodeficiency virus positive patients: a study from tribal area of central India

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ABSTRACT

Background: AIDS was first recognized in the United States in 1981, in homosexual men in New York. In 1983, human immunodeficiency virus (HIV) was isolated from a patient with lymphadenopathy, and by 1984 it was shown that causative agent of AIDS. 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 are common. HIV-positive individuals are a risk of co-infection with HBV and HCV and/or both infections. Co-infections of HBV and HCV with HIV have been associated with reduced survival, with an increased risk of progression to severe liver diseases and an increased risk of hepatotoxicity associated with antiretroviral therapy.

Methods: The present study was conducted duration from September 2011 to October 2013. A total of 100 AIDS patients of different age groups including 68 males and 32 females were enrolled in the study attending outdoor or admitted in wards of Department of Medicine, Dr. B. R. A. Hospital Raipur (C.G.). 50 HIV negative healthy controls are also included in the study to minimize the observer and instrumental bias.

Results: In our study most common occupation of patients were 24 (24 %) labour. Most common mode of transmission was heterosexual seen in 93 (93%) of patients. The prevalence of HbsAG in HIV seen in 6 (6%) of cases .The prevalence of HCV in HIV seen in 2 (2%) of cases and all patients were male and found to be age group between 30-40 year The co-prevalence of HbsAG & HCV in HIV seen in 1 (1%) of cases and it was female patient and age group was 30 to 40 years. There is incidence of deranged liver function tests in HBsAg for S. Bilirubin, SGOT, SGPT and alkaline phosphatase was 6, 4, 3 and 2 patients respectively in HCV SGOT in 1 patients. The incidence of deranged liver function tests was 5 among the co-infected patients with CD4<200 compared to 2 in those with CD4>200. The mean CD4 count was 193.6 /mm. Maximum patient seen in grade 1 (88.8 %) liver enzyme elevation. Most common opportunistic infection in both HBsAG & HCV were pulmonary tuberculosis.

Conclusions: Prevalence of hepatotoxicity is more common in HIV patient than other & co prevalence of either HBsAG or HCV accelerates the progression of liver disease which further causing liver derangement and increase morbidity & mortality of the patients. Mild to moderate hepatotoxicity is common as compared to severe hepatotoxicity. Screening of HIV with HBsAg & HCV and early diagnosis & treatment of disease will decrease the morbidity and mortality of the patients.

Keywords: Human immunodeficiency virus, Hepatitis B virus, Hepatitis C virus

INTRODUCTION

AIDS was first recognized in the United States in 1981, in homosexual men in New York. In 1983, human immunodeficiency virus (HIV) was isolated from a patient with lymphadenopathy, and by 1984 it was shown that causative agent of AIDS. In 2011, more than 8 million people living with HIV were receiving antiretroviral therapy (ART).[1]

Current status in India: The first cases of HIV were diagnosed among sex workers in Chennai in 1986. Since then, the country has evolved from low to concentrated epidemic. In 2009, an estimated 2.4 million people (aged 15-49) were living with HIV, slightly lower than the 2.5 million reported in 2001. However, India remains just behind South Africa and Nigeria in numbers of persons living with HIV.

Current status in India in Chhattisgarh: A total of 1,310 AIDS patients were detected in 2011-12 and 1,550 in 2012-13. Also, 635 people died of AIDS during this period." 2,556 people were detected HIV positive in 2012-13, while the number was 2,982 in 2011-12," Highest no. of cases in Raipur district with 401 (2012-13) AIDS patients, which was 364 in 2011-12.

Co-infection of HIV with HBsAG and HCV: Human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) are major public health concerns. Because of shared routes of transmission, HIVHCV co-infection and HIV-HBV co-infection and/or both are common. HIV-positive individuals are a risk of co-infection with HBV and HCV and/or both infections. Co-infections of HBV and HCV with HIV have been associated with reduced survival, with an increased risk of progression to severe liver diseases and an increased risk of hepatotoxicity associated with antiretroviral therapy.[2]

METHODS

Study Population All patients, who were having AIDS whether symptomatic or asymptomatic, attending outdoor of Medicine department or admitted in indoor of department of Medicine of Dr. B.R.A.M. Hospital, Raipur (C.G.) during the study period and gave oral informed consent after understanding the purpose of study, constituted the study populations.

Study period: The present study was conducted in the Department Of Medicine, Pt. J. N. M. Medical College, Raipur (C.G.) from September 2011 to October 2013.

Study size: 100 AIDS patients of different age groups including 68 males and 32 females were qualified to be enrolled in the study attending outdoor or admitted in wards of Department of Medicine, in Dr. Bhim Rao Ambedker Memorial Hospital, Raipur from September 2011 to October 2013. 50 HIV negative healthy controls are also included in the study to minimize the observer and instrumental bias.

All patients were investigated for Routine haemogram (Hb, total leukocyte count), Liver function test. Renal function test, HBsAg, HIV, CD4 Count, Anti Hcv antibody, USG abdomen, X-ray chest.

Inclusion criteria:

HIV Positive Patients.

Exclusion criteria:

1. All HIV negative individuals.
2. Known case of Malignancy.
3. Patients who don't gave consent for the study.

RESULTS

In this study, 68 (68%) were male & 32 (32%) were female. The mean age group in our study was 36.42 ± 10.61 years in which male were 38.21+11.5 years age groups and female were 31.87 + 7.03 years.

Table 1: Prevalence of HbsAG in HIV patient.

	Positive	Negative	P value
HBASG	6	94	0.038

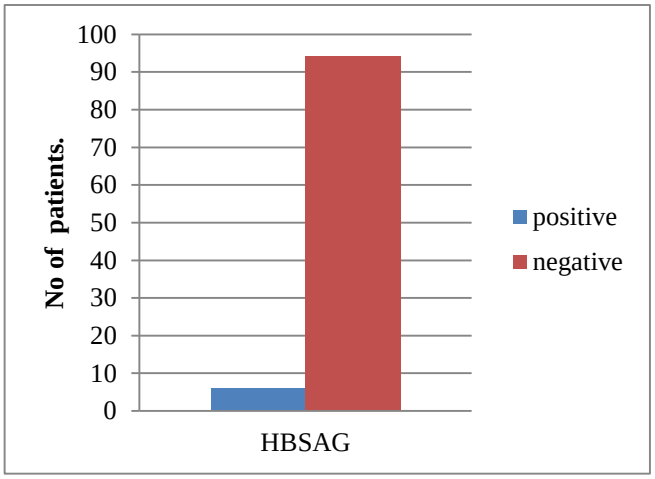

Figure 1: Prevalence of HbsAg in HIV patient.

Maximum patients in 26-35 yrs. age group (45 patients). In control maximum no. of patients was age group between 26-35 years. Most common occupation of patients were 24 (24 %) labour. Most common mode of transmission was heterosexual seen in 93 (93%) of patients. The prevalence of HbsAG in HIV seen in 6 (6%) of cases .The prevalence of HCV in HIV seen in 2 (2%) of cases. The co-prevalence of HbsAG & HCV in HIV seen in 1 (1%) of cases.

Table 2: Prevalence of HCV in HIV patient.

	Positive	Negative	P value
HCV	2	98	0.47

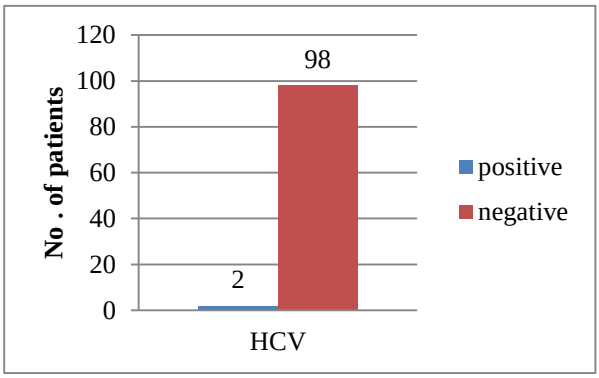

Figure 2: Prevalence of HCV in HIV patient.

Table 3: Co-prevalence of HbsAg and HCV in HIV patient.

	Positive	Negative	P value
HBsAG & HCV	1	1	0.72

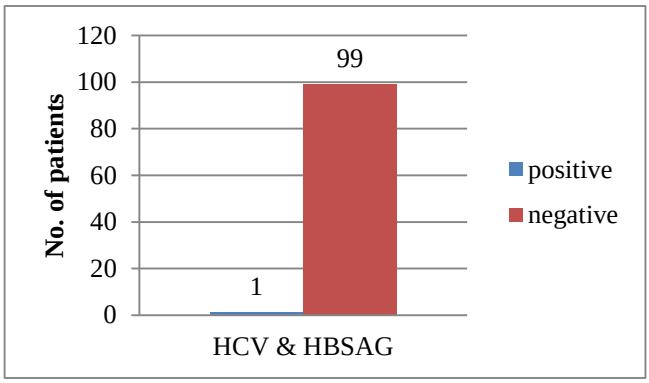

Figure 3: Co-prevalence of HbsAg and HCV in HIV patient.

Table 4: Incidence of deranged liver function test in HBsAG and HCV co-infection in HIV patient.

	Deranged bilirubin	Deranged SGOT	Deranged SGPT	Deranged Alkaline Phosphatase
HBSAG Positive	6	4	3	2
HCV Positive	0	1	0	0
HBSAG & HCV Positive	0	0	0	0

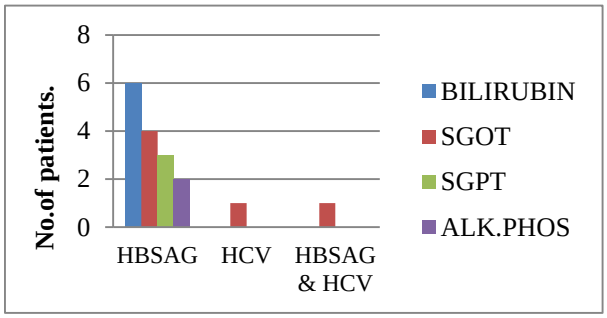

Figure 4: Incidence of deranged liver function test in HBsAG and HCV co-infection in HIV patient.

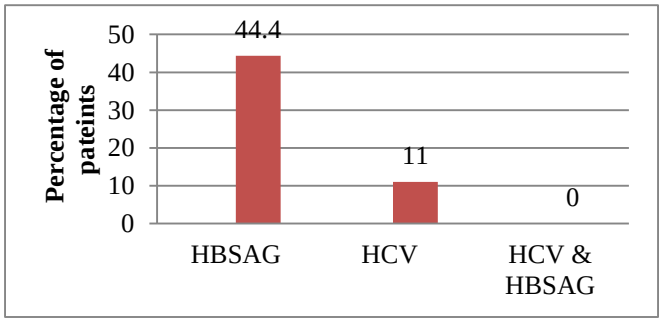

Figure 5: Opportunistic infection associated with HBsAg & HCV co-infected with HIV patients.

The incidence of deranged liver function tests in HBsAg for S. Bilirubin, SGOT, SGPT and alkaline phosphatase was 6, 4, 3 and 2 patients respectively in HCV SGOT in 1 patient. The incidence of deranged liver function tests was 5 among the co-infected patients with CD4<200 compared to 2 in those with CD4 >200.

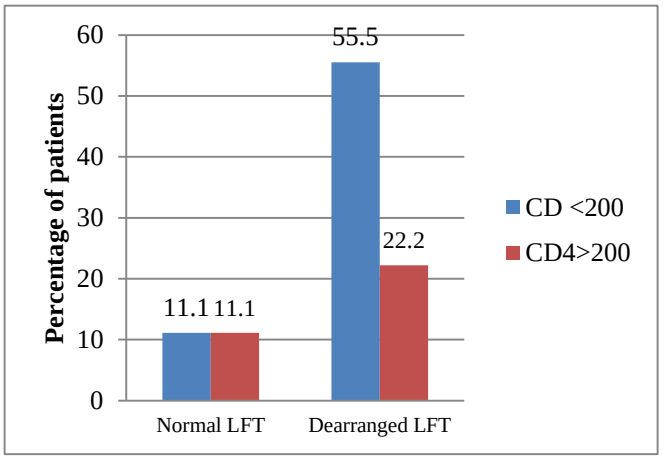

Figure 6: Relationship between liver function tests and CD4 counts of HBsAg and HCV co-infected with HIV patients.

The mean CD4 count was 193.6 /mm. Maximum patient seen in grade 1 (88.8 %) liver enzyme elevation. Most common opportunistic infection in both HBsAG and HCV were pulmonary tuberculosis.

Table 5: Opportunistic infection associated with HBsAg and HCV co-infected with HIV patients.

	Opportunistic infection	%
HBsAG	4	44.4
HCV	1	11
HBsAG & HCV	0	0

Table 6: Relationship between liver function tests and CD4 counts of HBsAg and HCV co-infected with HIV patients.

	CD4 count <200, n=6	%	CD4 count >200, n=3	%
Normal lft	1	11.1	1	11.1
Deranged lft	5	55.5	2	22.2
Total	6	66.6	3	33.3

DISCUSSION

HIV, HBV and HCV are major public health concerns. Because of shared routes of transmission, HIV-HCV co-infection and HIV-HBV co-infection and/or both are common. HIV-positive individuals are a risk of co-infection with HBV and HCV and/or both infections. Co-infections of HBV and HCV with HIV have been associated with reduced survival, with an increased risk of progression to severe liver diseases and an increased risk of hepatotoxicity associated with antiretroviral therapy.

Worldwide, HIV is responsible for 38.6 million infections as estimated at the end of 2005 while HBV and HCV account for around 400 million and 170 million chronic infections, respectively. Moreover, among the HIV infected patients, 2-4 million are estimated to have chronic HBV co-infection while 4-5 million are co-infected with HCV. An estimated one-third of the deaths in HIV patients are directly or indirectly related to liver diseases.[3]

The prevalence rates of co-infection with HBV and HCV in HIV-patients have been variable worldwide depending on the geographic regions, and the type of exposure. In HIV-infected patients who are first exposed to HBV in adulthood, the clinical presentation is often more subtle and may be silent. Alanine aminotransferase (ALT) is usually lower and jaundice is infrequently seen. This reflects reduced immune response in these patients. Nevertheless, HIV positive individuals are less likely to clear the virus and more prone to develop into chronic infection. In a study in Australia, 23% of the HIV-infected patients developed chronic HBV infection after acute hepatitis B, compared to 4% of non-HIV-infected patients. The chance of seroconversion to anti-HBs was proportional to the CD4 count.[4]

HIV-infected patients with chronic hepatitis B commonly have high viral load and positive HBeAg. Both markers have recently been shown to be associated with the development of hepatocellular carcinoma.[5]

In a multi-centre study involving 5293 homosexual men, liver-related mortality was 14.2 per 1000 person years in HBV-HIV co-infected cases, compared to 1.7 per 1000 in those infected with HIV alone and 0.8 per 1000 in those infected with HBV. People with HIV infection are often affected by viral hepatitis; about one-third are co-infected with either HBV or HCV, which can cause long-term illness and death. More people living with HIV have HCV than HBV. Viral hepatitis progresses faster and causes more liver-related health problems among people with HIV than among those who do not have HIV.[6,7]

Although drug therapy has extended the life expectancy of people with HIV, liver disease—much of which is related to HCV and HBV has become the leading cause of non-AIDS-related deaths in this population. People with HIV who are co-infected with either HBV or HCV are at increased risk for serious, life-threatening complications. As a result, anyone living with HIV should be tested for HBV and HCV.[8-10]

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