

## SHORT COMMUNICATION

**Seroprevalence of HIV-HBV Co-Infection****Suresh B. Sonth<sup>\*</sup>, Sathyanarayan M.S, Mariraj J. and Krishna S***Department of Microbiology, S.N. Medical College, Navanagar, Bagalkot-587102  
Karnataka, India*

**Abstract:** *Objectives:* To find the rate of prevalence of Hepatitis B viral co-infection with Human Immunodeficiency virus infection and comparing its prevalence in male and female patients. *Background:* Chronic hepatitis B virus (HBV) infection, which affects 7%–10% of HIV-infected patients, is associated with an increased frequency of AIDS-related and non-AIDS-related clinical endpoints, such as end-stage liver diseases including cirrhosis and hepatocellular carcinoma. HIV and hepatitis B virus (HBV) infection share transmission patterns and risk factors; therefore, it is not surprising that the prevalence of chronic HBV infection is elevated among HIV-infected persons. *Method:* A total of 100 patients were picked up who were positive for HIV 1 & 2 antibodies (Tridot & ELISA), & tested for the presence of HBsAg (ELISA). As control, 100 healthy blood donors were tested for the presence of HBsAg. *Result:* Out of 100 HIV infected patients, 21 (21%) were positive for the presence of HBsAg, as compared to only 2 (2%) among healthy blood donors. *Conclusion:* Hence considering the high infectivity, morbidity and mortality due to HBV in HIV infected individuals, routine evaluation of hepatitis B virus markers may be carried out in all the HIV infected individuals

**Keywords:** HIV, HBV, HBsAg, ELISA, AIDS.

**Introduction**

HBV infection is prevalent throughout the world [1]. Its prevalence is very high in India [2-4]. The modes of transmission of HBV & HIV are similar being transmitted overtly by blood transfusion and covertly by percutaneous/permucosal routes [5]. HBV does not significantly affect the course of HIV disease, but HIV does alter the course of HBV. HIV-infected persons are less likely to clear acute HBV infection spontaneously, and HIV/HBV-coinfected persons face a higher risk of liver-related death than those monoinfected with either virus [6]. In the post highly active antiretroviral therapy (HAART) era, life expectancy of patients with HIV has increased and the focus has now shifted to the management of concurrent illnesses such as chronic HBV and HCV infections, syphilis and other co-infections which have the potential to increase long-term morbidity and mortality [7]. Co-infection of HIV-HBV is known to result in higher viral load of hepatitis virus & greater liver damage [1].

The studies of Hepatitis B infection in HIV infected patients are rare in India. Therefore the present study was designed to find the seroprevalence of HBsAg in HIV infected patients.

### Material and Method

The study was conducted in the department of Microbiology, VIMS, Bellary, from April 2005 to April 2006. Clinically suspected cases attending to STD clinic with high risk behavior were screened for HIV antibodies by rapid (Tridot) & ELISA methods. 100 HIV positive cases were taken and tested for the presence of HBsAg. The test was performed by ELISA method (ERBA LISA HEPATITIS B test kit from ERBA diagnostics Mannheim GmbH), the plate was read in ELISA reader at 450nm and the cut off value was calculated as per the instruction manual. Any value above cut off was taken as HBsAg positive. A total of 100 healthy blood donors were included as controls and their serum samples were screened for the presence of HBsAg.

### Result

Out of 100 HIV infected patients, 21 (21%) were positive for the presence of HBsAg, as compared to only 2 (2%) positives for the HBsAg among healthy blood donors. The difference was statistically significant.

Gender	Cases			Control		
	No tested	HBsAg positive	% of HBsAg positive	No tested	HBsAg positive	% of HBsAg positive
Male	55	13	23.63	58	01	1.724
Female	45	08	17.77	42	01	2.38
Total	100	21	20.7	100	02	2.05
Male:Females → Cases: $\chi^2 = 0.51$ , $p=0.42$ , Controls: $\chi^2 = 0.05$ , $p=0.81$ , HIV-HBV → OR=13.03						

The following table no-1 shows the sex distribution of HBsAg in HIV positive patients. When compared the difference was found to be not significant.

### Discussion

HIV shares common route of transmission with HBV [8]. HIV and HBV are known to be transmitted sexually. It is therefore not surprising to find that some patients with HIV are co-infected with HBV [9-11].

The present study shows a high prevalence of HBV (21%) infection in patients with HIV, as compared to the control healthy blood donors (2%) [OR=13.03], closely resembling a study carried out by Dhanvijay AG [12] et al, which reveals 22.58% prevalence of HBV among HIV infected individuals attending STD clinic. A study carried out by Chattopadhyaya et al [13], shows 23% prevalence of HBV among HIV infected individuals. 30.9% prevalence of HBsAg was found in HIV infected individuals in a study by Tankhiwale SS et al [14]. While comparing the prevalence of HBsAg among HIV individuals in males and females, the present study has not shown any statistical significant difference.

Table-2: Prevalence of HIV & HBV in various studies			
Study by	Year	No of cases	HIV+HBV (%)
Dhanvijay et al [12]	1999	175	22.58
Ramanamma et al [15]	2000	140	14.3
Saillour et al [16]	1996	1935	6.9
J Ockenga et al [17]	1997	232	9
Zhou Y-H et al [18]	2011	136	20.1
Helen M. Chun et al [19]	2010	2769	24.91
Present study	2005-06	100	21

While comparing the prevalence of HIV-HBV co-infection, though the routes of transmission are same, the prevalence of co-infection varies from place to place. The following table no 2 shows prevalence of HIV-HBV co-infection in various studies.

The high prevalence of HBV infection has been reported among individuals practicing risky sexual behavior. Dual infection of HBV & STD like HIV can lead to reactivation of HBV infection and also increase in replication of HIV [20]. Co-infection of STD's like HIV with HBV is known to result in higher viral load of hepatitis virus and greater liver damage & increase in incidence of HBV reactivation & reinfection. Hence considering the high infectivity, morbidity & mortality due to HBV, routine evaluation of hepatitis B virus markers may be carried out in all the HIV infected individuals [14].

#### References

1. Sobeslavsky O. Prevalence of Hepatitis B virus infection in various countries: A WHO Collaborative study. *Bull WHO* 1980; 58: 621-628.
2. Joshi SH, Gorkashankar AC, Mukherjee M, Rao VR, Sathe MS, Anabhavane SM, Bhatia RM. Prevalence of HBsAg carriers among some tribes of Madhya Pradesh. *Indian J Med Res* 1990; 91:340-345.
3. Nath G, Sarkar M, Sanyal SC. Hepatitis B surface and C antigen amongst blood donors in Uttar Pradesh. *Indian J Med Microbiol* 1991; 9:179-182.
4. Elavia AJ, Banker DD. Prevalence of Hepatitis B surface antigen and its subtypes in high risk group subjects and voluntary blood donors in Bombay. *Indian J Med Res* 1991; 93:280-285.
5. Kumar A, Shukla I, Malik A. Co-infection with Hepatitis B and Human Immunodeficiency Viruses in Patients of Liver Disease. *Indian J Med Microbiol* 2003; 21(2):141-142.
6. Benhamou, Yves MD: *JAIDS* 2007; 45:s57-s65.
7. Munshi SU, Hoque MM, Mondol MEA, Jalaluddin M, Tabassum S, Islam MN. HBV, HCV and syphilis co-infections in human immunodeficiency virus positive Bangladeshi patients: Observation at two reference laboratories. *Indian J Med Microbiol* 2008; 26(3):282-283.
8. Cropley I, Main J. Hepatitis C virus infection: co-infection with HIV and HBV. *Baillieres Best Pract Res Clin Gastroenterol* 2000; 14(2):265-275.

9. Wyld R, Robertson JR, Brettle RP, Mellor J, Prescott L, Simmonds P. Absence of hepatitis C virus transmission but frequent transmission of HIV-1 from sexual contact with doubly infected individuals. *J Infect* 1997; 35:163-166.
10. Fainboim H, Gonzalez J, Fassio E, Martinez A, Otegni L, Eposto M, Cahn P, et al. Prevalence of hepatitis viruses in an antihuman immunodeficiency virus positive population from Argentina: A multicentric study. *J Viral Hepat* 1999; 6(1):53-57.
11. Catalan-Soares BC, Almeida RT, Carneiro Proietti AB. Prevalence of HIV ½, HTLV-I/II, hepatitis B virus (HBV), hepatitis C virus (HCV), *Treponema pallidum* and *Trypanosoma cruzi* among prison inmates at Manhuacu, Minas Gerais State, Brazil. *Rev Soc Bras Med Trop* 2000; 33(1):27-30.
12. Dhanvijay AG, Thakar YS, Chande CA. Hepatitis B virus infection in HIV infected patients. *Indian J Med Microbiol* 1999; 17(4):167-169.
13. Chattopadhyaya D, Aggarwal R, Prakash C, Sen S, Kumari S. Sexually Transmitted Diseases (STD) markers in multitransfused children in relation to Human Immunodeficiency Virus type-1 (HIV-1) infection: Impact of STD markers in Blood donors. *J Trop Paed* 1997; 43:1-4.
14. Tankhiwale SS, Khadase RK, Jalgoankar SV. Seroprevalence of anti-HCV and hepatitis B surface antigen in HIV infected patients. *Indian J Med Microbiol* 2003; 21(4):268-270.
15. Ramanamma MV, Ramani TV. Incidence of hepatitis B infection in Visakhapatnam. *Indian J Med Microbiol* 2000; 18(4):170-71.
16. Saillour F, Dabis F, Dupon M, et al. Prevalence and determinants of antibodies to hepatitis C virus and markers for hepatitis B virus infection in patients with HIV infection in Aquitaine. *BMJ* 1996; 313:461-64.
17. Ockenga J, Tillmann HL, Trautwein C, et al. Hepatitis B and C in HIV infected patients, prevalence and prognostic value. *J Hepatol* 1997; 27(1):18-24.
18. Zhou Y-H, Liu F-L, Yao Z-H, Duo L, Li H, et al. Comparison of HIV, HBV, HCV and Co-Infection Prevalence between Chinese and Burmese Intravenous Drug Users of the China-Myanmar Border Region. *PLoS ONE* 2011;6(1): e16349. doi:10.1371/journal.pone.0016349.
19. Helen M. Chun, Ann M. Fieberg, Katherine Huppler Hullsiek, Alan R. Lifson, Nancy F. Crum-Cianflone, et al. Epidemiology of Hepatitis B Virus Infection in a US Cohort of HIV-Infected Individuals during the Past 20 Years. *Clin Infect Dis*. 2010; 50(3):426-436.
20. Risbud A, Mehendale S, Basu S, et al. "Prevalence and incidence of hepatitis B virus infection in STD clinic attendees in Pune, India". *Sex Transm Infect* 2002; 78:169-173.

\*All Correspondence: Dr. Suresh. B. Sonth, Associate Professor, Department of Microbiology, S. Nijalingappa Medical College, Navanagar, Bagalkot-587102 Karnataka, India  
Email: sureshsonth@rediffmail.com