



## SEROPREVALANCE OF HIV, HBV AND HCV COINFECTION: STUDY IN A TERTIARY CARE CENTRE IN NORTHERN INDIA.

### Medicine

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### ABSTRACT

**BACKGROUND:** Coinfection with HBV or HCV affects large no of HIV patients in the world, particularly in India and other developing countries. All three viruses have similar route of transmission of infection. Coinfection greatly increases the morbidity and mortality in affected patients.

**MATERIAL AND METHODS:** The study was conducted in a tertiary care center in northern India. A total of 63 cases of HIV infection were studied for co infection of HBV and HCV.

**RESULT:** Out of 63 HIV infected patients studied the number of cases of HIV/HBV and HIV/HCV coinfectd was 1.58 % (1/63) each. None of the cases were HIV/HBV/HCV or triple infected.

**SUMMARY:** HBV and HCV coinfection is common among HIV infected patients increasing their morbidity and mortality. All these patients should be mandatorily investigated for HBV or HCV coinfection and clear policy guidelines should be made for providing better health care facilities to these patients.

### KEYWORDS

Prevalence, HIV, HBV, HCV

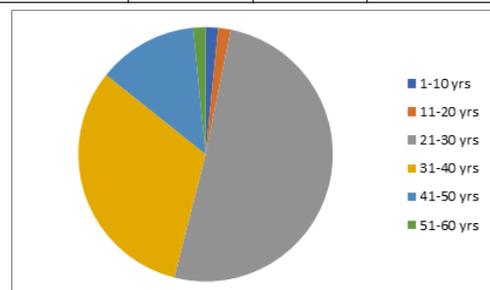
**BACKGROUND:** HIV is a retroviral disease affecting millions of people across the globe. As per UNAIDS report of 2017 the total no of people living with HIV is approximately 36.7 million out of which 16.7 millions are male, 17.8 million are females and 2.1 millions are children less than 15 yrs of age (1). As per estimates there are approximately 350 million chronic HBV and 170 million chronic HCV carriers in the world with approximately 1.2 million deaths annually due to HBV (2, 3). HIV positive Individuals co infected with Hepatitis B and or Hepatitis C pose a big challenge for health care workers and establishment in providing a comprehensive health care. It is known that all the three viruses are transmitted by transfusion of blood and blood products, needle sharing, sexually and through vertical transmission (4-8). Hence the chances of acquiring either HBV or HCV infection or both in HIV positive individuals are very high. Both HBV and HCV infection has a deleterious effect on liver functioning and are associated with increased carrier state and development of chronic hepatitis and hepatocellular carcinoma. People co infected with HIV/HBV have higher level of viremia and progression to chronic hepatitis and subsequently cirrhosis and HCC is almost five times faster. The co infection alters the course of the disease with rapid progression to cirrhosis and development of cancer (18). Co infected patients also have reduced survival due to rapid progression of disease and toxicity occurring as a result of anti retro viral therapy (19). Studies have shown that co infection with HBV and HCV has become a leading cause of non AIDS related death (20-22). In Southeast Asia HBV is second most common cause of acute hepatitis in India. The data on HBV, HCV coinfection with HIV among armed forces population is sparse. This present study is undertaken to know the prevalence rate of coinfection of HIV with HBV and HCV.

**MATERIAL AND METHODS:** The study was done in a tertiary care centre in northern India from July 2015 to June 2017. All patients coming to this HIV centre were diagnosed with HIV after Rapid test and ELISA and subsequent subjected to PCR to determine viral load. HBV was confirmed by detection of surface antigen by Rapid ICT Card test followed by Real Time PCR to confirm. HCV infection was also diagnosed by Rapid ICT card test and confirmed by Real Time PCR. A total of 63 patients diagnosed with HIV were subjected for

detection of HBV and HCV infection. The total no of males, females and children (<15 yrs) were 58, 03 and 02 respectively. The mean age was 32.5 yrs. Table 1 depicts the distribution of patients in various age groups. There were only three females and two children (<15 yrs) who were HIV positive.

**RESULTS:** In our study the maximum numbers of HIV positive patients were male (58/63). The most common age group affected was age group of 21-30 yrs followed by 31-40 yrs which is of concern as it involves the most productive age group of young population (Table:1).

Age Distribution	Males	Females	Children(<15 yrs)
1-10 Yrs	-	-	01
11-20 Yrs	-	-	01
21-30 Yrs	30	02	-
31-40 Yrs	20	-	-
41-50 Yrs	08	-	-
51-60 Yrs	-	01	-
<b>Total</b>	<b>58</b>	<b>03</b>	<b>02</b>



**Table 1 and Pie chart: Age distribution of HIV positive patients**

The most common route of transmission was sexual. Females were infected by their partners. The children were perinatally infected. The total no of patients that were HIV/HBV and HIV/HCV positive were 01 each (1.58%). None of the patients showed positivity for

HIV/HBV/HCV or triple infection. Table 2 shows the no of HIV, HIV/HBV and HIV/HCV positive cases.

Age Distribution	HIV Positive	HIV/HBV Positive	HIV/HCV Positive	HIV/HBV/HCV Positive
1-10 Yrs	01	-	-	-
11-20 Yrs	01	-	-	-
21-30 Yrs	32	01	01	-
31-40 Yrs	20	-	-	-
41-59 Yrs	08	-	-	-
51-60 Yrs	01	-	-	-
Total	63	01	01	00

**Table 2: Distribution of HIV, HIV/HBV and HIV/HCV coinfectd patients in different age groups**

**DISCUSSION:** HIV is a posing a global threat in spite of global efforts on containing the disease. In 2016 the total no of people living with HIV/AIDS is estimated to be 36.7 million with 1.8 million new infections with around 1 million deaths (1). Concomitant infection with HBV or HCV further increases the morbidity with increase in chronic carrier state, cirrhosis and hepatocellular carcinoma.

The prevalence of HIV in India is quite high and it has the second highest number of people living with HIV (3). Among HIV infected patients, 2-4 million are estimated to have chronic HBV infection while 4-5 million are co-infected with HCV (9). An estimated one third of deaths in HIV patients are directly or indirectly related to liver diseases (2). In our study there was a male predominance (92%) amongst HIV infected patients, as the patients were mostly from armed forces. Various studies have also showed a male preponderance (73% and 86%) supporting the fact that male subjects are significantly at high risk of developing HBV/HCV co-infection (9,10). The incidence among females was 4.76%. The vast difference in number of males and females infected with HIV may be due to the fact that majority of the patients were from armed forces with very less number of females staying with spouses. The maximum number of cases belonged to age group between 21-40 yrs which is the sexually active and is of reproductive age. This also suggests that sexual route could be the commonest mode of transmission for HIV & HBV. A similar finding was published regarding possible common route of transmission by Mohammad M et al (15).

The incidence of HBV infection is quite high in India with a prevalence rate of approx 3% (16). Screening of blood donors from eastern region has shown HbsAg seropositivity rate of 0.99% (17). Lodha et al reported a HBV prevalence rate of 1-2% in India in a study conducted in Delhi (24). The incidence of HCV infection among Indians was estimated to be between 1-1.9% (25). As per National centre for Disease Control the prevalence of HCV infection in general population in India is approximately 1% (26).

The incidence of HIV/HBV and HIV/HCV infection in our study is 1.58 % which is lower than other studies published for general population in India (11, 12). Another study published in India showed a prevalence rate of hepatitis B positive cases was 3.4% and that hepatitis C were 0%(13) in HIV infected patients. Our study results of HIV/HBV and HIV/HCV positivity rates of 1.58% were similar to another study from northern India where the HBsAg positivity rate was 2.25% and HCV positivity rate was 1.6%(14). A similar study published by Devi KsH and Singh HB showed the prevalence of HIV/HBV/HCV, HIV/HBV and HIV/HCV among IUD users was 6, 4.8 and 52.4%(23). The lower incidence rates may be due to increased awareness programmes and efforts taken by government to sensitize the common population with facilities for early detection and treatment of the individual with imparting of education to partners and protection of children.

**CONCLUSION:** It is clear that HBV and HCV coinfection is prevalent in HIV infected patients which increases the risk of developing early cirrhosis and HCC with high mortality rates in these patients (15). These coinfectd patients also suffer from increased risk of ART toxicity due to early and profound liver damage. Since all three viruses have similar route of transmission, it is recommended that all HIV patients should be investigated for concurrent HBV and HCV infection.

#### REFERENCE:

1. UNAIDS data 2017: Joint United Nations programme on HIV/AIDS (UNAIDS)
2. Puri P, Srivastava S. Lower chronic hepatitis B in South Asia despite all odds: Bucking

- the trend of other infectious diseases. *Tropical Gastroenterology* 2012; 33(2):89-94.
3. Mukhopadhyaya A. Hepatitis C in India. *Journal of Biosciences* 2008; 33:465-473.
4. Saravanan S, Velu V, Kumarasamy N, Nanda Kumar S, Murugavel KG, Balakrishnan P, et al co infection of Hepatitis B and Hepatitis C virus in HIV infected Patients in south India. *World J Gastroenterol.* 2007; 13:5015-20.
5. Ahuja S, Malhotra S, Chauhan A, Hans C. Seroprevalence of Hepatitis B and C Co infection in HIV Positive Patients from a Tertiary Care Hospital. *JIMSA.* 2013;26(2).
6. Daw MA. Transmission of Hepatitis C Virus. In: Oumaima stambouli (Eds). *Hepatitis c virus: molecular pathways and treatments.* OMICS group, beveda, USA, 2014.
7. Guptha S, Singh S. Occult hepatitis B virus infection in ART-naïve-HIV-co-infected patients seen at tertiary care centre in north India. *BMC infect dis.* 2010;10:53.
8. Soriano V, Vispo E, Lambaraga P, Medrano J, Barrierio P. Viral Hepatitis and HIV coinfection. *Antiviral Res.* 2010;85:303-15.
9. Kumarasamy N, Solomon S, Flanigan TP, Hemalatha R, Thyagarajan SP, Mayer KH. Natural history of human immunodeficiency virus disease in southern India. *Clin Infect Dis* 2003; 36:79-85.
10. Saravanan S, Velu V, Kumarasamy N, Nandakumar S, Murugavel KG, Balakrishnan P, et al. Coinfection of hepatitis B and hepatitis C virus in HIV infected patients in South India. *World J Gastroenterol* 2007;13:5015-20.
11. Tankhiwale SS, Khadase RK, Jalgoanker SV. Seroprevalence of anti HCV and hepatitis B surface antigen in HIV infected patients. *Indian J Med Microbiol* 2003;21:268-70.
12. Chandra M, Khaja MN, Farees N, Poduri CD, Hussain MM, Acejz Habeeb M, et al. revalence, risk factors and genotype distribution of HCV and HBV infection in the tribal population: A community based study in south India. *Trop Gastroenterology* 2003; 24:193-5
13. Mahajan A, Tandon VR, Verma S, Singh JB, Sharma M. Prevalence of Tuberculosis, Hepatitis B, Hepatitis C and Syphilis co-infection among HIV/AIDS patients. *Indian J Med Microbiol* 2008; 26: 196-207.
14. Tripathi AK, Khanna M, Gupta N, Chandra M. Low prevalence of Hepatitis B virus and Hepatitis C virus co-infection in patients with human immunodeficiency virus in Northern India. *JAPI* 2007; 55:429-31.
15. Mohammad M, Talel G, Sheikhian A, Ebrahimzade F, Pournia Y, Ghasemal E et al. Survey of both hepatitis B virus (HBsAg) and hepatitis C virus (HCV-Ab) co-infection among HIV positive patients. *Virology journal* 2009; 6:202.
16. Puri P. Tackling the hepatitis B burden in India. *J Clin Exp Hepatol.* 2014;4:312-319.
17. Chatteraj A, Behl R, Kataria VK. Infectious disease markers in blood donors. *Med J Armed Forces India.* 2008; 64:33-35
18. Chandra N, Joshi N, Raju YSN, Kumar A, Teja VD. Hepatitis B and/or co - infection in HIV infected patients: A study in a tertiary care centre from South India. *Indian J Med Res.* 2013;138:950-4.
19. Mohammed M, Talel G, Sheikhian A, Ebrahimzade F, Pournia Y, Ghasemal E, et al. survey of both Hepatitis B virus (HbsAg) and hepatitis C virus(HCV-Ab) co-infection among HIV positive patients. *Virology journal.* 2009;6:202
20. Solange zacaluni FREITAS (1), sheila Araujo TELES (2) et al: HIV and HCV coinfection: prevalence, associated factors and genotype characterization in the Midwest region of BRAZIL. *Rev Inst Med Trop Sao Paulo.* 56(6):517-524.
21. Thio CL. Hepatitis B Human Immunodeficiency virus coinfection. *Hepatology.* 2009;49:138-45.
22. HIV and Viral Hepatitis CDC guidelines-2014.
23. Devi KsH, Singh NB, Singh HL, Singh YM. Coinfection by human immunodeficiency virus, hepatitis B virus and hepatitis C virus in injecting drug users. (146-7) *J Indian Med Assoc.* 2009;107:144.
24. Lodha R, Jain Y, Anand K, Kabra SK, Pandav CS. Hepatitis B in India: a review of disease epidemiology. *Indian Pediatr.* 2001;38(4):349-371
25. Sievert W, Altraif I, Razavi HA, et al. A systematic review of Hepatitis C virus epidemiology in Asia, Australia and Egypt. *Liver Int.* 2011; 31(suppl 2):61-80
26. National centre for disease control India. News letter 2014 Jan-Mar; 3(1).