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# SEROPREVALENCE OF HEPATITIS B SURFACE ANTIGEN AND ANTI- HCV CO-INFECTION IN HIV INFECTED PATIENTS AT RIMS, RANCHI

Microbiology

**Md. Khalid Anjum** Department of Microbiology,Palamu Medical College, Palamu, Jharkhand

**Manoj Kumar*** Department of Microbiology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand
*Corresponding Author

**Amber Prasad** Department of Microbiology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand

**Kumari Seema** Department of Microbiology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand

## ABSTRACT

**Introduction :-** Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) are most common chronic infections. There is a high degree of epidemiological similarity between HBV, HCV and HIV as regard to high risk groups, routes of transmission and the presence of viruses in the body fluids. The population, that is at high risk of developing HIV infection is also at high risk of developing HBV and HCV infection due to common route of transmission, such as through blood and blood products, sharing of needles to inject drugs and sexual activity. HBV and HCV co-infection in HIV positive individuals is of utmost importance due to hepatological sequences of these viruses, and lowering life expectancy of HIV infected patients.

**Aim:-** To find out seroprevalence of Hepatitis 'B' surface antigen (HBsAg) and Anti-HCV co-infection in Human Immunodeficiency Virus (HIV) infected patients at RIMS, Ranchi.

**Methods:-** From 9thJune 2016 to 8th June 2017, total 120 HIV positive patients were screened for HBsAg and Anti-HCV co-infection by using Chemiluminescent microparticle immunoassay (CMIA) method by ARCHITECT PLUS i1000SR (ABBOTT).

**Result:-** HBsAg was found in 03 (2.5%) out of 120 HIV positive patients, while 02 (1.66%) Anti-HCV positive found in 120 HIV positive patients. No HIV positive patients had both HBsAg and Anti-HCV co-infection.

**Conclusion:-** Since, the principal route for transmission of HIV, HBV and HCV is same, hence HBV and HCV co-infection may be expected in HIV infected patients. Therefore, it would be recommended to screen for these viruses in all HIV positive individuals and their sexual partners also, identification and education of high risk, as early as possible. This is also important in light of Hepatitis -B being a vaccine preventable disease.

## KEYWORDS

## INTRODUCTION

Persons at high risk of human immunodeficiency virus (HIV) infection are also likely to be at risk of other infections, including hepatitis B virus (HBV) and hepatitis C virus (HCV). HIV, HBV, and HCV share epidemiological characteristics such as routes of transmission, through the exchange of blood or other body fluids during injecting drug use (IDU), sexual contact, or mother-to-child transmission during the perinatal period (Petty *et al*., 2014a).

In the era of antiretroviral therapy (ART), liver diseases from Hepatitis virus co-infection is a leading cause of morbidity and mortality in the HIV-positive population in North America and Europe [1, 2]. Hepatitis virus- HIV co-infection is highly endemic in Asian & African countries, but it has been less studied in these regions as compared to developed countries.

In the situation of co-infection, one virus impacts the natural history of the other viruses. The natural course of HBV & HCV infection are accelerated and causing faster progression of liver disease to cirrhosis and Hepatocellular carcinoma, as a result of greater viral load and greater liver damage. Disease progression to cirrhosis in HIV positive patients is almost three times faster as compared to HIV negative patients [3-5].

Most of the studies in HBV & HCV co-infections in HIV positive patients were carried out in western patients population. It is highly important to understand the prevalence and disease characteristics of HBV & HCV co-infection in HIV positive patients, as it may disrupt the success of ART programme in developing countries, particularly in Asian countries.

## AIMS & OBJECTIVES

To find out seroprevalence of Hepatitis B surface antigen (HBsAg) and Anti-HCV co-infection in Human Immunodeficiency Virus (HIV) positive patients at RIMS, Ranchi, Jharkhand, India.

## MATERIALS AND METHODS

The study was carried out at the department of Microbiology, Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand, India , during the period from 9th june 2016 to 8th june 2017. In this prospective observational study , total 120 diagnosed HIV positive patients, attending ART centre at RIMS, Ranchi were included.Two ml venous blood sample was collected from all HIV positive patients. The collected blood were centrifuged at 5000 rpm for 15 mints. after serum seperation. Hepatitis B surface antigen and Anti-HCV antibodies were tested in the collected blood. Tests were performed by using Chemiluminescent microparticle immunoassay (CMIA) method by ARCHITECT PLUS i1000SR (ABBOTT).

## RESULTS

A total of 120 HIV positive patients were screened for the presence of HBsAg and Anti- HCV in their sera. Total 5 (4.17%) were co-infected with hepatitis virus. HBsAg was found in 03 (2.5%) out of 120 HIV positive patients, while 02 (1.66%) Anti-HCV positive found in 120 HIV positive patients. Triple infection with both HBsAg and HCV was not seen in any HIV patients. Among 3 HBsAg positive cases, 2 were male and 1 was female, but among 2 Anti-HCV cases both were males, hence male gender predominance was seen.

In the age group 0 - 10 years, 02 were HIV positive; In the age group 11 - 20 years, 06 were HIV positive; In the age group 21 – 30 years, 28 were HIV positive. Again in the age group 31 – 40 years, 49 were HIV positive; In the age group 41 – 50 years, 29 were HIV positive. In the rest age group between 51 – 60 years and 60 years, 04 and 02 HIV positive seen respectively. Among 120 HIV positive cases, 2 HBsAg positive cases found in the age group 31 – 40 years, and 01 HBsAg positive case found in 51 – 60 years age group. One case of anti- HCV positive found in the age group 21 – 30 years, and other in age group 31 -40 years.

Majority of the HIV infected patients were from 31-40 years age group (40.83%) followed by 41-50 years age group (24.17%). Data on the risk factors for HIV seroconversion in co-infected patients shows that predominant risk factor observed were heterosexual (73%) compared to parental risk (13%).

Total number of HIV Positive males was 71 i.e; 59.17 % and total number of HIV positive females was 49 i.e; 40.83 %.

Among 120 HIV positive patients 19 i.e; 15.83 % were HIV positive Tribals and 101 cases i.e; 84.17 % were HIV positive Non-tribals.

## DISCUSSION

India has the third largest HIV epidemic in the world. In 2016, HIV prevalence in India was an estimated 0.3%. This figure is small compared to most other middle-income countries but because of India's huge population (1.324 billion) this equates to 2.1 million people living with HIV. In the same year, an estimated 62,000 people died from AIDS-related illnesses[6]. Overall, India's HIV epidemic is slowing down, with a 32% decline in new HIV infections (80,000 in 2016), and a 54% decline in AIDS-related deaths between 2007 and 2015 [7].

The HBV and HCV co-infection varies worldwide depending upon various factors such as risk groups, geographic regions along with type of exposure[8 -10]. The HIV infection along with VBV and HCV co-infection complicates the course and management of HIV, even affect the antiretroviral therapy. Liver damage may be directly related to HIV infection or may result from conditions such as alcoholism, prior viral hepatitis or intravenous drug abuse, which are highly prevalent in patients with HIV infection [11]. In addition, sepsis, malnutrition, or the administration of possibly hepato-toxic antiretroviral medications may also lead to liver damage [12,13].

In our study , finding indicates that HIV - infected person are increased risk of viral co-infection, such as HBsAg (2.5%) and HCV (1.66%).The HIV infection is heterosexually acquired predominantly in our study group, also there is significant risk for HBV in males. This is similar to previous reports that male gender is associated with a significant higher risk of co-infections with HBV [14]. The prevalence of HBsAg in our study is less as compared to Gupta S et al[15] and Saravanan S et al [16].

HCV prevalence in our study group is much lower than other studies from other parts of India. This can be related to the type of risk-groups in this study, such as low incidence of IVD use and infrequent transfusion. Saha *et al* [17] reported an HCV co-infection rate of 92% in intravenous drug user from Northeast India. The low HCV prevalence in our data could be attributed to the mode of transmission of these viruses. While epidemiological evidence indicates sexual transmission of HCV, this occurs much less efficiently than HBV or HIV. Moreover, we need to address other possible non-sexual sources of HCV acquisition which are often overlooked [18]. In our study HCV-HIV co-infection is only in male patients.

## CONCLUSION

Co-infection of HIV with hepatitis B and Hepatitis C virus is 2.5% and 1.66% respectively, which is significantly higher than to the general population of representative region of Jharkhand [19]. Therefore universal screening must be done for hepatitis B and hepatitis C virus in all HIV positive patients.

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