# CLINICO- CORRELATION OF HBSAG IN HIV SEROPOSITIVE CASES

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## Abstract

Human immunodeficiency virus (HIV) and Hepatitis Band C viruses (HBV and HCV) are the three most common chronic viral infections documented world-wide. Both hepatitis viruses and HIV can be transmitted through the use of intravenous drug in adults or unprotected sexual intercourse. The major routes for HIV transmission are similar to that of hepatotropic viruses; as a result, infections with HBV are common in HIV-infected patients.To study the sero-positivity of HbsAg in HIV positive patients and to compare the prevalence of Anti HCV and HbsAg positivity in normal persons. This study was a Hospital based Observational Cross-sectional study, carried out in the Department of Microbiology for a period of 12 months i.e, between July 2023 to July 2024. A total of 358 patients infected with HIV were taken into the study in which 42 cases were found to be HBsAg. The patients belonged to both sexes and age range from 20 to 60 years. Detailed patient data including age, occupation, relevant history, examination finding were noted using prepared proforma and each patient underwent general physical examination and systemic examination of abdomen, chest, cardiovascular and central nervous systems and a set of investigations consisting of haemoglobin estimation, total and differential white cell count, platelet count, ESR, urine analysis, liver function tests, blood for VDRL, Mantoux test, radiogram chest and HBsAg testing. In the present study HBsAg was found to be positive in 42 (11.7%) of 358 HIV seropositive cases. HBsAg antigenaemia was observed in 32 patients (76.19%) at the onset (21.4% having viral hepatitis and 54.7% were asymptomatic HBsAg carriers). In 5 patients (11.9%) HBsAg antigenaemia appeared after 6 months and in another 5 patients (11.9%) after 12 months (asymptomatic HBsAg carrier). 20 patients (57.1%) showed disappearance of HBsAg by 6 months, 1 patient (2.8%) become negative between 7 to 12 months, 3 patients (8.5%) in 13 to 18 months, 2 patients in 25 to 30 month (5.7%) and 9 patients (25.7%) showed persistence of HBs antigenaemia even after 30 months.The study revealed considerable percentage of HIV seropositive cases having HBsAg antigenaemia. HlV infection appeared to prolong the HBsAg positive state thereby increasing the chances of development of chronicity.

**KeyWords:-HIV, Antigenaemia, Seropositivity, HbsAg, Hepatitis**

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## 1.Introduction:

The HBV is the leading cause of acute and chronic liver disease throughout the world [1]. The recent figures from the World Health Organization (WHO) shows that 296 million people were living with chronic hepatitis B infection in 2019, with 1.5 million new infections each year. In 2019, an estimated 820, 000 people died mostly from cirrhosis and hepatocellular carcinoma that was attributed to HBV infection [2]. HIV-HBV co-infections have been documented in India; six per cent of HIV-HBV co-infection have been reported in clients from Chennai, southern India [3], while the figures for Chandigarh, (Northwest India) [4] and Mumbai (Western India) [5] are 7.5 and 16 per cent, respectively.

About one-third of deaths due to liver diseases in HIV-infected patients are attributable to co-infection with either HBV or HCV [6]. During early childhood, modes of transmission play a leading role on the fate of infection. Both hepatitis viruses and HIV can be transmitted through the use of intravenous drug in adults or unprotected sexual intercourse [7]. The major routes for HIV transmission are similar to that of hepatotropic viruses; as a result, infections with HBV and HCV are common in HIV-infected patients. Co-infections of HBV and HCV with HIV have been found to be associated with reduced survival and increased risk of progression to liver disease and also hepatotoxicityassociated with antiretroviral therapy [8].

Due to common mode of transmission of HIV, HBV and HCV like using shared needles, syringes, other injectable devices, sexual intercourse, or even mother to baby transmission, it is common to see HBV and HCV co infection in HIV positive individuals. Reduced survival and increased progression to hepatic disease is seen with co infections of HBV and HCV with HIV. The co-infection with HBV and HCV with HIV also leads to hepatotoxicity which is associated with antiretroviral therapy. Heterosexual route is the predominant route of transmission of HIV infection in India [9,10].

Earlier HIV was poorly understood, fatal disease, now it is a treatable chronic disease with a chance of normal life expectancy. Due to this Comorbidities like cardiovascular diseases and non-AIDS malignancies are more commonly seen by health professionals. Similarly in HCV treatment, due to the establishment of direct-acting acting antiviral agents the cure rates have reached above 95%andassociated drastic reduction in risk of hepatocellular carcinoma and reducing the liver transplantation due to cirrhosis in HCV infection. In HBV infection we can hope to get good drug development in future [11]. HIV positive individuals who are co-infected with HBV should be given HIV antiviral medication which have activity against HBV like tenofovir and entecavir [12]. 105

Hence, this study was undertaken to know the seroprevalence of HBsAG in HIV positive individuals and compare it with seronegative individuals attending an Integrated Counselling and Testing Centre (ICTC) located in northIndia.

## MATERIAL AND METHODS

This was a hospital based observational cross-sectional study. This study was conducted in Department of Microbiology at a tertiary care centre.

**Study period-** It was for one year from 2023 to 2024.

**Inclusion criteria:**

1. HBsAg who consented to submit their serum sample and gave their written consent were included.

2.HIV (Human Immunodeficiency Virus) seropositive individuals as per NACO guidelines from ICTC were taken.

**Exclusion criteria:**

1.The Individuals who were not willing to

participate in the study

2.Repeat sample of the same patient were excluded.

**Sample size:** The sample size in the present study included all 42 cases were found to be HBsAg positive in 358 HIV seropositive patients.

In addition to recording of detailed history, each patient underwent general physical examination and systemic examination of abdomen, chest, cardiovascular and central nervous systems and a set of investigations consisting of haemoglobin estimation, total and differential white cell count, platelet count, ESR, urine analysis, liver function tests, blood for VDRL, Mantoux test, radiogram chest and HBsAg testing (reverse passive haemagglutination test). Competitive ELISA was used for screening and Western blot test was per formed for confirmation of HIV infection. All patients with no positive clinical and laboratory findings were followed up once a year and the remaining every six months. Clinical examination and investigations were repeated during each follow up.

**Statistical analysis:** Data recorded on the case report from and structured were subsequently entered and into a spreadsheet. Date management and analysis were Data recorded on the case report from and structured proforma were subsequently entered and into a spreadsheet. Date management and analysis were performed using Microsoft excel.

**Ethical clearance:**

The Ethical committee clearance certificate was duly obtained before starting of study by Institutional Medical Ethical Committee.



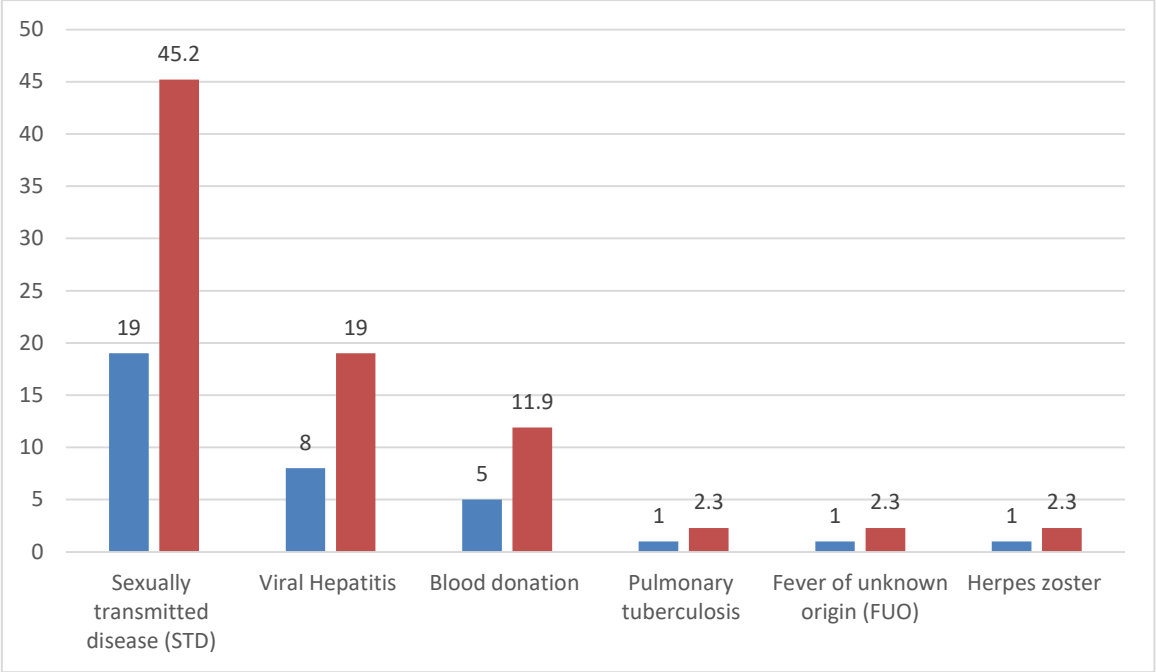
**RESULTS**

In our study HBsAg was found to be positive in 42 (11.7%) of 358 HIV seropositive cases. The youngest was 20 years and the oldest patient was 56 years of age. Most of the patients volunteered history of extramarital heterosexual exposure. There was history of receiving blood transfusion was highest. A small number denied history of extramarital sexual exposure, receiving blood transfusion, surgery, intravenous drug abuse or of tattooing. Mode of presentation of HBsAg positive patients was sexually transmitted disease in 19 cases (45.2%%), viral hepatitis in 8(19.0%), blood donation in 5 (11.9%), pulmonary tuberculosis1(2.3%) and fever of unknown origin in 1(2.3%) andherpes zosterin1(2.3%) as shown in Table no.1and Graph no.1.

**Table no.1 Mode of presentation of HBsAg positive patients**

| Mode of presentation | Number | Percentage |
|---|---|---|
| **Sexually transmitted disease (STD)** | 19 | 45.2 |

| | | |
|---|---|---|
| **Viral Hepatitis** | 8 | 19.0 |
| **Blood donation** | 5 | 11.9 |
| **Pulmonary tuberculosis** | 1 | 2.3 |
| **Fever of unknown origin (FUO)** | 1 | 2.3 |
| **Herpes zoster** | 1 | 2.3 |



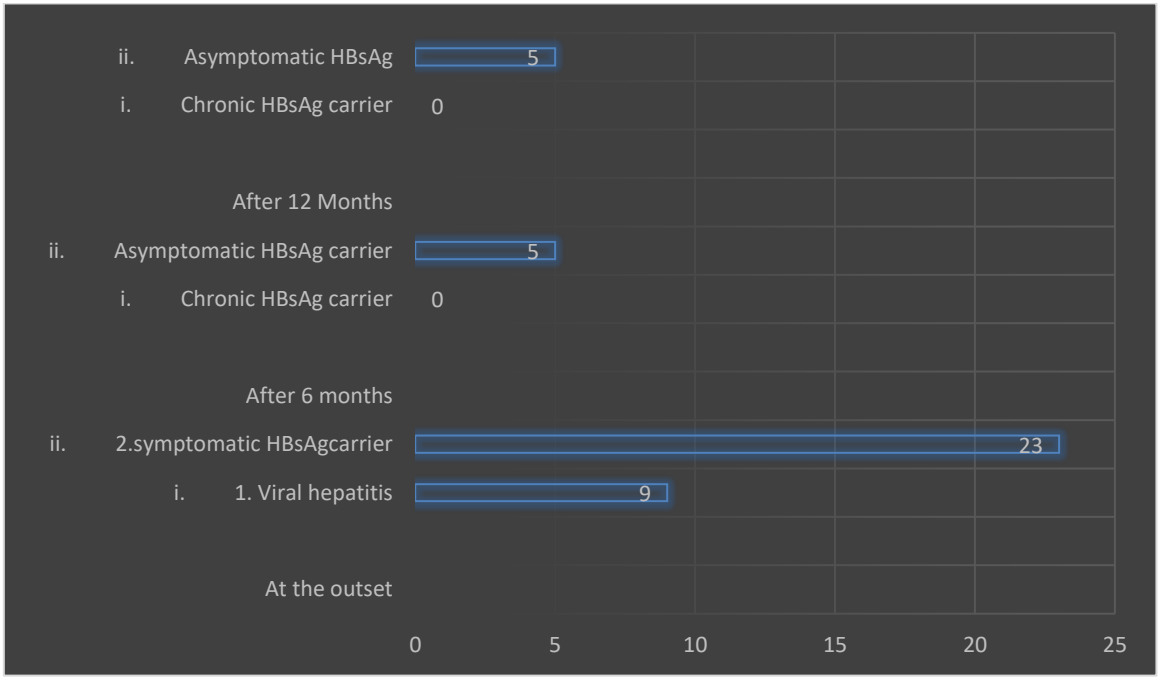

**Graph no.1 Mode of presentation of HBsAg positive patients**

HBsAg antigenaemia was observed in 32 patients (76.19%) at the onset (21.4% having viral hepatitis and 54.7% were asymptomatic HBsAgcarriers).In5 patients (11.9%)HBsAgantigenaemia appeared after 6 months and in another 5 patients (11.9%) after 12 months (asymptomatic HBsAg carrier) as shown in Table no. 2 and Graph no.2. No case was diagnosed HBsAg positive afteroneyear of follow up ofHIV seropositive cases.

**Table no.2 Time taken for HBs antigenemia in HIV seropositive patients**

| **Time of first detection ofHBsAg positivity** | **Number** | **Percentage** |
|---|---|---|
| **At the outset** | | |

| | | |
|---|---|---|
| **i. 1.Viral hepatitis** | 9 | 21.4 |
| **ii. 2.symptomatic HBsAgcarrier** | 23 | 54.7 |
| **After 6 months** | | |
| **i. Chronic HBsAg carrier** | - | - |
| **ii. Asymptomatic HBsAg carrier** | 5 | 11.9 |
| **After 12 Months** | | |
| **i. Chronic HBsAg carrier** | - | - |
| **ii. Asymptomatic HBsAg** | 5 | 11.9 |
| **Total** | 42 | 100 |




**Graph no.2 Time taken for HBs antigenemia in HIV seropositive patients**

In our study 3 patients were diagnosed to be suffering from AIDS, and hence invalided out of service, 3 patients were released from service on superannuation and 1 died of generalised cryptococcosis. The remaining 35 patient were follwed up for HBsAg status. Of these, 20 patients (57.1%) showed disappearance of HBsAg by 6months, 1 patient (2.8%)becomenegative between 7 to 12 months, 3 patients (8.5%) in 13 to 18 months, 2 patients in 25 to 30 month(5.7%) and 9 patients (25.7%) showed persistence of HBs



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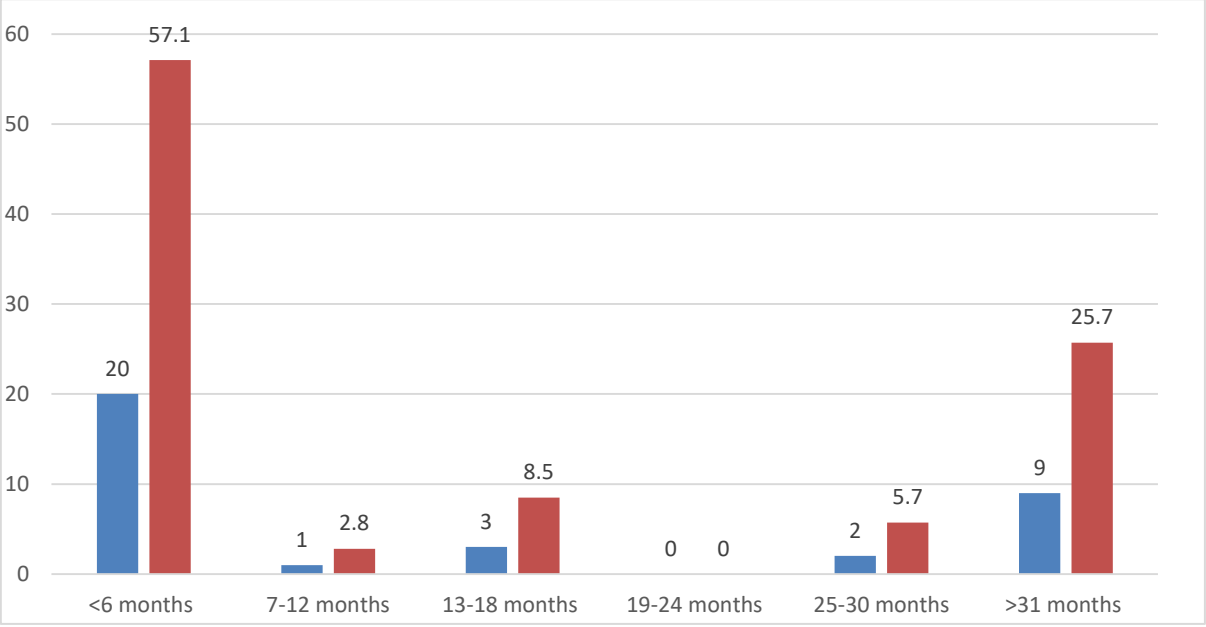
antigenaemia even after 30 months follow up as shown in Table no.3 and Graph no.3.

**Table no.3 Time taken for HBsAg seronegativity**

| Duration | Number | Percentage |
|---|---|---|
| **<6 months** | 20 | 57.1 |
| **7-12 months** | 1 | 2.8 |
| **13-18 months** | 3 | 8.5 |
| **19-24 months** | - | - |
| **25-30 months** | 2 | 5.7 |
| **>31 months** | 9 | 25.7 |
| **Total** | 35 | 100 |






**Graph no.3 Time taken for HBsAg seronegativity**

## DISCUSSION

HIV accounts for an estimated 40 million chronic infections while Hepatitis C and HBV cause 130 million and 370 million chronic infections respectively. The prevalence of HIV in India is quite high and it has the second highest number of people living with HIV. Among HIV infected patients, 2-4 million are estimated to have chronic HBV infection while 4-5 million are co-infected with HCV An estimated one third of deaths in HIV patients are directly or indirectly related to liver diseases.[13,14] Both HIV and HBV are predominantly-transmitted by sexual contact and parenterally e.g. transfusion of infected blood and blood products, contaminated needles etc. Hence, there are considerable number of cases having mixed infection [15].

In the present study, the prevalence of HBsAg was found to be 42 (11.7%) of HIV seropositive cases. This is in accordance with the study by Vineeta Sharma et al [16] , where HBV (11%) and HCV (13%) co-infection in HIV seropositive was higher than in control population. Other similar studies by Garima Mittal et al[17],Saha Debraj et al.[18], Behl S et al [19] and Satish Kinagi et al [20].where 12 (10.2%) patients were positive for HBsAg, 19 (16.1%) for anti-HCV Despite advanced treatment and prevention major cause of liver-related mortality among and 2 (1.7%) for HIV antibodyand The prevalence of HBsAg (11.3%) was higher compared to anti-HCV (1.9%) among the HIV infected ART-naive patients respectively.



In the present study, HBsAg antigenaemia was observed in 32 patients (76.19%) at the onset (21.4% having viral hepatitis and 54.7% were asymptomatic HBsAg carrier). In 5 patients (11.9%)HBsAg antigenaemia appeared after 6 months and in another 5 patients (11.9%) after 12 months (asymptomatic HBsAg carrier). This finding is similar to other study by P.N Arora et al [21]. This, therefore inferred that comparatively much longer time is required to achieve HBsAg negativity in HIV seropositive patients. This data is not recorded in literature. There is no documentation of this data in any literature.

Because of shared routes of viral transmission, HIV patients are more likely to contract Hepatitis B virus (HBV). People with HIV/HBV coinfection had a faster progression of liver disease than those with HBV infection alone, including an increased risk of hepatocellular carcinoma, liver-related death, and all-cause mortality. As a result, HIV patients must undergo HBV screening and receive appropriate treatment [22].

methods, HBV infection continues to be a HIV patients. Tenofovir, also known as TDF



or TAF, is the mainstay of therapy for coinfected individuals due to its efficacy and high barrier to resistance. Although antiviral medication does not provide a functional cure for HBV infection, prolonged HBV suppression with therapy has been found to lower the risk of liver-related consequences.

**CONCLUSION**

The study revealed considerable percentage of HIV seropositive cases having HBsAg antigenaemia. HlV infection appeared to prolong the HBsAg positive state thereby increasing the chances of development of chronicity

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**Declarations:**

**Conflicts of interest: There is no any conflict of interest associated with this study**

**Consent to participate:** We have consent to participate.

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**Consent for publication:** We have consent for the publication of this paper

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**Authors' contributions: All theauthors equally contributed the work.**

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