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Original Article

HBV- HIV Coinfection – Thirteen Years Expereince at Tertiary Care Center Of Northeren India

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ABSTRACT

Introduction: Hepatitis B and HIV coinfection means simultaneous infection with both the viruses and is due to sharing common transmission routes like intravenous drug use. It increases the risk of severe liver disease, including cirrhosis and hepatocellular carcinoma (HCC), compared to mono-infection. Majority of HIV patients are already on highly active anti-retroviral treatment which is usually TLE regimen which contains tenofovir and lamivudine and both are active against HBV also.

Aim of Study: The aim of present study was to determine the HBV and HIV Co-infection at Tertiary care centre of Northern India.

Material and Methods: The present study was conducted to determine HBV-HIV co-infection in patients reporting at Medical Gastroenterology department of Post Graduate Institute of Medical Sciences in North India. A total of 11,500 serum samples of Hepatitis B and 6500 of HIV confirmed patients were tested for co-infection.

Observations: A total of 11,5000 confirmed patients of HBV and 6500 of HIV were screened for co-infections. Out of this total pool of 18,000 patients, 151 patients (0.83 %) were found to be having co-infection. Out of these 151 co-infected patients, 130 (86.09 %) were males and 21 (13.91%) were females. On analysing geographical distribution of patients, majority belonged to rural area. In male group, 98 (75.38 %) patients resided in rural area whereas in females, 15 (71.42%) belonged to rural area. Age distribution characteristically showed predominance in younger age group of 20-50 yrs in both the groups. In males, 110 (84.61%) of patients were in 20-50 yrs of age group and in females 18 (85.71%) belonged to 20-50 yrs of age. On analysis of risk factors, there were strong differences noted in both the groups. In males, out of 130 patients, 68 patients (52.30%) were alcoholic, 77 patients (59.23%) were smokers, 32 patients (24.61%) had past history of surgery, 22 patients (16.92%) were intravenous drug abusers, 15 (11.53%) had got tattooing, 3 (2.30%) had previous history of blood transfusion, 2 patients (1.53%) gave history of multiple sexual partners, 4 (3.07%) had undergone dental procedures, 3 (2.30 %) had acute hepatitis B, 76 patients (58.46%) had F0-F1 fibrosis, 42 (32.30%) had F2-F3 fibrosis, 12 (9.23%) had F4 or cirrhosis and none patient developed HCC. Only one male patient had both parents positive for HIV. In comparison in females, none was alcoholic, smoker or intravenous drug abuser, 9 patients (42.85 %) had past history of surgery, 5 patients (23.80 %) had got tattooing, 1 (4.76 %) had previous history of blood transfusion, none gave history of multiple sexual partners, 3 (14.28%) had undergone dental procedures, 1 (4.76 %) had acute hepatitis B, 15 patients (71.42 %) had F0-F1 fibrosis, 5 (23.80%) had F2-F3 fibrosis, 1 (4.76 %) had F4 or cirrhosis and none developed HCC.

Conclusion: Surveillance for co-infections in every patient of HBV, HCV and HIV is mandatory. Timely diagnosis and institution of antiviral therapy can lead to decreased incidence of end stage liver disease, development of HCC and need of liver transplant as definitive cure. It also helps in identification and modification of

associated risk factors.

***Keywords**: Hepatitis B, Hepatitis C, Intravenous drug abuse, Tattooing, Surgery, Blood transfusion.*

INTRODUCTION

HBV and HIV co-infection affects roughly 5–20% of the 37 million people living with HIV globally, sharing similar transmission routes. **[1-2]** This co-infection accelerates liver disease progression, increasing risks of cirrhosis and hepatocellular carcinoma (HCC), and requires specialized antiretroviral therapy (ART) incorporating HBV-active agents like tenofovir. It is commonly transmitted through shared needles, blood products, and vertical transmission. They typically coexist among patients in highly endemic areas or among those at great risk of infection, like those who inject drugs or homosexual men, due to shared means of epidemiological and transmission characteristics. Co-infected patients often experience faster progression to liver fibrosis, cirrhosis, and higher risk of H.C.C (many studies have reported 5-6 times increased risk) **[3-7].** Co-infected individuals often have higher HBV DNA levels and lower rates of HBeAg seroconversion. Among those with HIV and HBV coinfection, the highest liver-related mortality rates have occurred in individuals with low CD4 cell counts.**[6]** Multiple studies have found that HIV and HBV coinfection and HIV and HCV coinfection have both played a major role in liver-related deaths in persons with HIV.**[7]** All patients with hepatitis should be tested for HBV, HIV and HCV. Regular monitoring of liver function tests (ALT/AST), HBV DNA, and HIV RNA is necessary. All HIV patients should be vaccinated against HBV.

MATERIAL & METHODS

The present study was conducted to determine HBV-HIV co-infection in patients reporting at Medical Gastroenterology department of Post Graduate Institute of Medical Sciences in North India. A total of 11,500 serum samples of Hepatitis B and 6500 of HIV confirmed patients were tested for co-infection. The present study was conducted over thirteen years from 01.04.2013 to 31.03.2026, for determining HBV-HIV co-infection in patients reporting at Medical Gastroenterology department of Post Graduate Institute of Medical Sciences in North India. A total of 11,500 serum samples of Hepatitis B and 6500 of HIV confirmed patients were tested for co-infection. Patients were enrolled in the study after proper consent and then tested for co-infection with other viruses. About 5 ml of whole blood was collected aseptically by venipuncture. The collected blood was allowed to clot; serum was separated by centrifugation at room temperature and then were tested for HCV, HBV and HIV by Enzyme linked immunosorbent assay. In all the enrolled patients, detailed history, physical and clinical examination was done. Every patient under- went complete biochemical examination which included complete hemogram, liver & renal function tests, viral screen, viral load, ultra sonogram abdomen, Fibroscan and upper Gastrointestinal endoscopy and Triple phase computed tomography scan wherever indicated.

OBSERVATIONS

A total of 11,5000 confirmed patients of HBV and 6500 of HIV were screened for co-infections. Out of this total pool of 18,000 patients, 151 patients (0.83 %) were found to be having co-infection. Out of these 151 co-infected patients, 130 (86.09 %) were males and 21 (13.91%) were females. On analysing geographical distribution of patients, majority belonged to rural area. In male group, 98 (75.38 %) patients resided in rural area whereas in females, 15 (71.42%) belonged to rural area. Age distribution characteristically showed predominance in younger age group of 20-50 yrs in both the groups. In males, 110 (84.61%) of patients were in 20-50 yrs of age group and in females 18 (85.71%) belonged to 20-50 yrs of age. On analysis of risk factors, there were strong differences noted in both the groups. In males, out of 130 patients, 68 patients (52.30%) were alcoholic, 77 patients (59.23%) were smokers, 32 patients (24.61%) had past history of surgery, 22 patients (16.92%) were intravenous drug abusers, 15 (11.53%) had got tattooing, 3 (2.30%) had previous history of blood transfusion, 2 patients (1.53%) gave history of multiple sexual partners, 4 (3.07%) had undergone dental procedures, 3 (2.30 %) had acute hepatitis B, 76 patients (58.46%) had F0-F1 fibrosis, 42 (32.30%) had F2-F3 fibrosis, 12 (9.23%) had F4 or cirrhosis and none patient developed HCC. Only one male patient had both parents positive for HIV. In comparison in females, none was alcoholic, smoker or intravenous drug abuser, 9 patients (42.85 %) had past history of surgery, 5 patients (23.80 %) had got tattooing, 1(4.76 %) had previous history of blood transfusion, none gave history of multiple sexual partners, 3 (14.28%) had undergone dental procedures, 1 (4.76 %) had acute hepatitis B, 15 patients (71.42 %) had F0-F1 fibrosis, 5 (23.80%) had F2-F3 fibrosis, 1 (4.76 %) had F4 or cirrhosis and none developed HCC. Only one male had both parents positive for HIV. Out of total pool of 151 co-infected patients, 91 patients (60.66%) had high viral load i.e. more than 1lakh I.U./ml

Table-1- Showing percentage of Co-infection in HBV-HIV study group

Total Patients (HBV & HIV)	Co-infected (HBV & HIV)	Monoinfected
18000	151 (0.83%)	17849 (99.17%)

Table 2- Showing Age group and Sex distribution in HBV-HIV Co-infected Patients

Total Patients (151)	Male (130 patients, 86.09%)	Female (21 patients, 13.91%)
0-10 yrs	0 (0%)	0 (0%)
11-20 yrs	1(0.76%)	0 (0%)
21-30 yrs	42 (32.30%)	4 (19.04%)
31-40 yrs	44 (33.84%)	6 (28.57%)
41-50 yrs	27 (20.76 %)	9 (42.85%)
51-60 yrs	10 (7.69%)	2 (9.52%)
61-70 yrs	4 (3.07%)	0 (0%)
71-80 yrs	2 (1.53%)	0 (0%)

Table 3- Showing Distribution of various parameters in HBV-HIV Co-infected study group

Total Patients (151)	Male (130)	Female (21)
Rural Background	98 (75.38%)	15 (71.42%)
Urban Background	32 (24.62%)	6 (28.58%)
Alcohol	68 (52.30 %)	0 (0%)
Smoking	77 (59.23%)	0 (0%)
H/o Surgery	32 (24.61%)	9 (42.85 %)
H/o Blood Transfusion	3 (2.30 %)	1 (4.76%)
Tattooing	15 (11.53%)	5 (23.80 %)
IV Drug abuser	22 (16.92%)	0 (0%)
Multiple Sex Partners	2 (1.53%)	0 (0%)
Dental Procedures	4 (3.07 %)	3 (14.28 %)
Hepatocellular carcinoma	0 (0%)	0 (0%)
Acute Hepatitis B	3 (2.30 %)	1 (4.76 %)
F0-F1 Fibrosis	76 (58.46 %)	15 (71,42 %)
F2-F3 Fibrosis	42 (32.30 %)	5 (23.80 %)
F4 - Cirrhosis	12 (9.23%)	1 (4.76%)

DISCUSSION

Co-dominant, HBV-dominant or HIV-dominant patterns result from coinfection. In our pool, co-infection was seen only in 0.83 % which is much less in comparison to 8.4 % reported in the HIV Outpatient Study (HOPS) during the years 1996 through 2007. **[8]** The reason for the same can be attributed to strict screening for co-infections in every mono-infected patient. As protocol, we always mandatory vaccinated for HBV in HCV or HIV patients. It prevents future infection of HBV in these patients. It is well proven in literature that HBV or HCV mono-infected patients can develop co- infection in future. Moreover, total free treatment including testing has led to exemplary high compliance rate, thus preventing complications of co-infections in future. Regular counselling of patients and family members throughout the course of illness helps in reducing risk factors responsible for future development of co-infections. It is multi -pronged strategy which is giving fruitful results. In mono-infections of HBV and HCV, male predominance is there but in our study group of co-infections, male predominance was more than as seen in mono-infections. The same observation was observed in geographical distribution of patients in which rural background is seen in both mono-infection and co-infection but this relationship was much stronger in latter group. In our study cohort, there was characteristic difference in age distribution of patients on basis of gender. In males, maximum patients were seen in younger age group of 20-50 yrs but female patients were predominantly seen in 40-70 yrs. The reason behind this can be explained on basis of different risk factors for counteracting co-infections in both the groups. In males, the most important risk factors were alcohol, smoking, intravenous drug abuse, tattooing, blood transfusions, past history of surgery but in female group surgery was most important risk factors. Thus, as males have high risk behaviour which usually occurs in younger age group and in females, various kind of surgeries like tubectomies, hysterectomies etc. are done in 20-50 yrs age group, hence maximum females belonged to this group. The same high-risk behaviour in males led to increased number of HBV-HIV co-infection in males. On similar lines of high-risk behaviour in males, acute HBV was seen more commonly in males, in comparison to females. Only one male had both parents positive for HIV which highlights the fact that in our geographical area, vertical transmission is not the major route for HIV or its co-infections. The good thing was that majority of patients in both the groups were having minimal or moderate fibrosis and limited number were in cirrhotic group. It can be explained on basis of HAART therapy (TLE regimen) being received by majority of patients which contains tenofovir and Lamivudine, both of them are active against HBV. Thus, practically majority of patients were already being treated for HBV, thus counteracting its detrimental effect on hepatic tissue and also limiting extra-hepatic manifestations. None patient in our study pool developed HCC, despite being HBV viral load in majority which can be attributed to strict screening for co-infections leading to timely detection and starting of treatment. Moreover, regular

counselling led to leaving habit of smoking and alcohol in majority of patients, along with maintenance of optimum body weight may have played part in lesser incidence of HCC in our study group.

CONCLUSION

Surveillance for co-infections in every patient of HBV, HCV and HIV is mandatory. Timely diagnosis and management can lead to decreased incidence of end stage liver disease, development of HCC and need of liver transplant as definitive cure. It also helps in identification and modification of associated risk factors. The risk factors are different in male and female and should be kept in mind for planning preventive strategies against these transmissible deadly diseases.

LIMITATION OF STUDY

Our study group, majority patients were uneducated or partially literate and belonged to poor socio-economic status, hence there are high chances that percentage of multiple sex partners and intravenous drug abuse may be under reported.

CONFLICTS OF INTEREST

The editors declare that there was no conflict of interest.

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