

Coinfection of HBV and HCV in HIV-positive Injecting Drug Users

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ABSTRACT

Introduction: Drug addicts represent a high-risk group for acquiring parenterally transmitted viral infections. It is very likely that an injecting drug user (IDU) infected with HIV will be infected with either HBV or HCV or both because of common high-risk behaviors.

Materials and methods: A cross-sectional study was carried out in which a total of 229 blood samples were collected from IDUs. They were screened for HIV.

Results and discussion: All HIV-positive patients were tested to observe whether a HBV or HCV infection (or both) is also present in the patients. A total of 22 patients were HIV-positive (9.6%). Of the 22 HIV-positive patients, 10 were positive for HCV (45.45%), 7 were positive for HBV (31.81%), and 2 (9%) were positive for all three.

Conclusion: Prevention efforts such as vaccination of IDUs and maximum syringe distribution should be taken to avoid sharing of syringes. Screening of all HIV-positive IDUs for HBV and HCV should be made mandatory.

Keywords: Hepatitis B virus, Hepatitis C virus, Human immunodeficiency virus, Injecting drug users.

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INTRODUCTION

Drug addicts represent a high-risk group for acquiring parenterally transmitted viral infections such as human immunodeficiency virus (HIV), hepatitis C virus (HCV), and hepatitis B virus (HBV). It is very likely that an injecting drug user (IDU) infected with HIV will also be infected with either HBV or HCV or both because of common high-risk behaviors.¹ HBV and HCV coinfection in HIV-positive individuals are of utmost importance owing to the underlying consequences such as the hepatological problems associated with these viruses, which have been shown to decrease life expectancy in the HIV-infected patients.² According to Centers for Disease Control and Prevention (CDC), treatment with antiretroviral therapy has improved the health and extended the life expectancy of people with HIV and liver disease—much of which is related to HBV, and HCV causes non-AIDS-related deaths in this population.³

Injecting drug users (IDUs) have the second highest HIV prevalence in our country (7.14%).⁴ India has an estimated 177,000 IDUs.⁴ The IDU population has been largely studied in the high HIV prevalence states in north-eastern and southern parts of the country, where prevalence of HIV (25.4–59.6%), HBV (10%), and HCV (54.5–90.4%) has been reported.^{5–7} The hospital where the study was carried out is situated in a part of Delhi where there is low-income slum and a state vegetable market, accounting for a high percentage of IV drug users. The aim of the study was to find the coinfection of HBV and HCV in HIV-infected IDUs, as the coinfection of viruses increases the morbidity and mortality of each other.⁸

MATERIALS AND METHODS

A cross-sectional study was carried in a secondary healthcare centre of Delhi over a period of 6 months in the year 2015. IDUs attending the integrated counseling and testing centre (ICTC) of our hospital were referred to the microbiology department. Consent was taken and counseling was given to explain the purpose of the study to each one of them. A total of 229 blood samples were collected from

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IDUs. Whole blood (4–5 mL) was collected and serum was obtained. The serum samples were tested for the presence of HIV antibodies according to National AIDS Control Organization (NACO) guidelines. HIV-positive samples were tested for HBsAg by Meri Screen (Meril Diagnostics). All positive samples were confirmed by SD bioo line kits. Anti-HCV antibodies were detected in the serum using Qualpro rapid diagnostic kits.

RESULTS

Of a total of 229 IV drug users, 218 were male and 11 were females. There were 22 male patients who tested positive for HIV, whereas none of the females were tested positive. Of these 22 patients, 21 were positive for HIV 1 and 1 was positive for both HIV 1 and 2. In these patients, it was noted that 10 were positive for HCV (45.45%), 7 were positive for HBV (31.81%). Of these 17 positive patients for HCV and HBV, 2 (9%) were positive for all three. The prevalence of HIV in this study is 9.6%, and the prevalence of HIV 1 and HIV 2 is 0.43%.

HIV positive	HIV plus HCV	HIV plus HBV	HIV plus HCV plus HBV
22/229 (9.60%)	10 (45.5%)	7 (31.81%)	2 (9%)

Statistical calculations using Chi-square test revealed that the difference in the prevalence of other infections' markers such as HBsAg and HCV with HIV was not statistically significant ($p > 0.05$).

DISCUSSION

Nearly 75% of people with HIV who report a history of injection drug use are also infected with hepatitis C virus (HCV). HIV/HCV co-infection more than triples the risk for liver disease, liver failure, and liver-related death. People with HIV infection in the West are often affected by chronic viral hepatitis; about one-third are co-infected with either HBV or HCV. More people living with HIV are infected with HCV than with HBV (CDC).

Our study showed male predominance (100%), which is in accordance with the study conducted in Iran (98%). This could indicate a higher prevalence of high-risk behaviors among men compared to women (IRAN study). However, some studies have suggested that there has been a rising number of female drug users over the past two decades.⁹

In our study the prevalence of HIV infection was 9.60%; in other studies carried out in Delhi, the prevalence of HIV infection was 25.9%,¹⁰ 37%,¹ and 13.8%.⁵ Though the HIV prevalence was less when compared to that in other studies in Delhi, it was similar to a study from Amritsar in IDUs.¹¹ The low prevalence in our study may be attributed to the National AIDS Control Programme Phase-IV (2012–17). The program included targeted interventions (TI) for high-risk groups and needle-syringe exchange programme (NSEP) opioid substitution therapy (OST) for IDUs, which could have influenced the results of our study.

HIV–HCV coinfection was 45.5%, while HIV–HBV coinfection was 31.81% in our study. Earlier quoted studies from Delhi reported HIV HCV coinfection of 19.6%,¹⁰ 9.6%,¹ and 14.5%⁵ while HIV–HBV coinfection was 3.4% among IDUs in 2012. HIV–HCV and HIV–HBV coinfection were found in 9.09% of patients, which is in accordance with the study, which showed 11.17%.¹ HIV–HCV coinfection was high compared to HIV–HBV coinfection, which is similar to the findings of other studies.

The mixed infection of HIV-1 and HIV-2 viruses has been reported from the northeastern states of India among the drug abusers by many workers.¹² But, in our study, mostly HIV-1 infection was detected from the drug addicts and only one HIV-1 and HIV-2 mixed infection was detected, which indicates that HIV-2 has not made it into this population.

CONCLUSION

The problem of injecting drug use (IDU) along with the a high prevalence of associated infections is rapidly spreading in some developing countries, including India.^{13,14} The infectious consequences of drug injection poses a global problem with more than 60 countries documenting HIV infection among persons practicing illicit drug injections today.¹⁵ We observed that coinfection of HIV is higher with HCV when compared that with HBV. All HIV-positive IDUs should be screened for HBV and

HCV infection and treated accordingly. Prevention efforts should include vaccination of IDUs who are non-immune to HBV and to implement target interventions, syringe sharing with efforts such as maximum syringe distribution cover. Hepatitis B and C should be included in HIV prevention messages and counseling.

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