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Original Article

PREVALENCE OF HEPATITIS VIRAL CO-INFECTION IN HIV-POSITIVE PATIENTS IN NNEWI, NIGERIA

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ABSTRACT

This study was conducted to ascertain the prevalence of hepatitis B and hepatitis C viral co-infection among Human Immunodeficiency Virus (HIV)-positive patients in Nnewi South Eastern Nigeria. Two hundred (200) HIV-positive patients; (100) HIV-positive on Antiretroviral Therapy (ART) and (100) HIV-positive patients not on ART were recruited for the study. One hundred (100) apparently healthy HIV-negative individuals served as control subjects. All subjects were between the ages of 18-40 years. Hepatitis B Surface Antigen (HBsAg) and Hepatitis C Virus (HCV) tests showed that 18 (18%) of the HIV-positive patients not on ART and 20 (20%) of those on ART were co-infected with HBsAg, while 16 (16%) of the patients not on ART and 23 (23%) of those on ART were co-infected with HCV. Only 1(1%) of the control subjects was positive for HBsAg while none for HCV. The result of the present study shows that the HIV-positive patients are at a greater risk of being co-infected with either HBV or HCV. To minimize the emergence of HIV and/or HBsAg and HCV resistance, or a rise in liver enzymes should be noted and the treatment of both infections should be coordinated. Therefore, the hepatitis viral co-infection status of the HIV-positive patients on ART should be assessed occasionally as this will aid in treating and monitoring of the patients.

Key Words: *Hepatitis B, Hepatitis C, HIV, ART.*

INTRODUCTION

Co-infection with human immunodeficiency Virus (HIV) and Hepatitis B Surface Antigen (HBsAg) are common globally[1]. Both hepatitis-B Surface Antigen (HBsAg) and Human Immunodeficiency Virus (HIV) infections are common in Nigeria and are a significant cause of mortality and morbidity[2]. Reports have indicated that hepatitis will contribute significantly to morbidity and mortality in HIV infected patients because of increased use and accessibility of Highly Active Antiretroviral Therapy (HAART)[3].

Liver toxicity is a growing problem among HIV patients, particular, in those who are co-infected with hepatitis C or hepatitis B virus[4]. Multiple concurrent factors make the study of the liver function during HIV infection treated with antiretroviral combinations an emerging issue. Although the introduction of Highly Active Antiretroviral Therapy (HAART) led to sharp drop of immunodeficiency-related opportunistic infections (including hepatobiliary ones), short and long-term toxicity of each single antiretroviral agent and their combination may add its effect to the frequently underlying chronic HBsAg and/or HCV infection, and their specific antiretroviral treatment[4].

About 15 to 25 percent of people infected with only hepatitis B will develop and die of liver disease, such as cirrhosis and liver cancer. HIV-infected people are three to six times more likely to develop a chronic or long-term hepatitis B infection because of their weakened immune systems than individuals without HIV.[14] People co-infected with HIV and hepatitis B may have a more rapid progression of liver disease due to their weakened immune systems, and the use of medications that can be toxic to their HBV-infected liver[14].

Co-infection with HCV and HIV is common, occurring in 50% to 80% of individuals who acquired HIV through parenteral exposures[1].

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Chronic HBsAg infection occurs in 10% to 15% of persons infected with HIV.[5,6]. The majority of liver diseases in People with HIV (PWHIV) are caused by viruses (especially hepatitis B and hepatitis C) or opportunistic infections[7].

Viral hepatitis has similar transmission vectors as HIV and is seen often in gay men and intravenous drug users because it is blood borne[8]. HIV infection modifies the course of HBsAg infection by increasing rates of chronicity, prolonging HBsAg viraemia and increasing liver-related morbidity[1].

Therefore, the objective of this study is to determine the prevalence of HBsAg and/or HCV co-infection in HIV - positive patients in Nnewi, Nigeria and to highlight the reciprocal interactions between the HIV and HBV/HCV.

MATERIALS AND METHODS

SUBJECTS

A total of two hundred HIV positive patients were used for the study (100 HIV-positive patients not on ART, 100 HIV-positive patients on ART). The control consisted of one hundred HIV negative apparently healthy individuals drawn from among medical students, students of Medical Laboratory Science and Staff of the College of Health Sciences and Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi. Their ages ranged from 18-40 years. Ethical approval was obtained from the Ethical Committee of Nnamdi Azikiwe University Teaching Hospital, Nnewi before embarking on the study. Informed consent was also obtained from the patients after explaining to them the purpose of the study.

METHODS

About 3ml of blood was collected from the antecubital vein of both patients and control subjects into lithium heparin. The samples were centrifuged at 3000 revolutions per minute for 5 minutes. The sera were separated, stored and stored frozen in aliquots at -20°C (Haier Thermocool Chest Freezer, Greece) until assayed. Hepatitis B Surface Antigen (HBsAg) detection was carried out using rapid Hepatitis B surface antigens test strip[9], while detection of antibodies to Hepatitis C Virus (HCV) was done using hepatitis C virus test strip[10].

STATISTICAL METHOD

In this study, a simple percentage was used to express the number of patients co-infected with HBsAg and/or HCV.

RESULTS

The result of the screening tests for HBsAg and HCV showed that 18 patients (18%) and 16 patients (16%) of the HIV positive patients not on ART were co-infected with Hepatitis B and Hepatitis C virus respectively, whereas only 1 subject (1%) of the HIV negative control subject showed positive result for HBsAg and none for Hepatitis C. Out of the 100 patients receiving ART 20 (20%) and 23 (23%) respectively, were co-infected with hepatitis B and hepatitis C viruses.

DISCUSSION

The present study showed that the rate of co-infection with hepatitis B and hepatitis C is more common in HIV infected patients compared with the HIV negative control subjects. Co-infections with Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBsAg) are common globally[1]. Both Hepatitis-B Virus (HBV) and Human Immunodeficiency Virus (HIV) infections are common in Nigeria and are a significant cause of mortality and morbidity[2]. Reports have indicated that hepatitis will contribute significantly to morbidity and mortality in HIV infected patients because of increased use and accessibility of Highly Active Antiretroviral Therapy (HAART)[3].

Once exposed to HBsAg, HIV-positive individuals are far more likely than others to develop chronic HBsAg infection,[11,12] and this may probably be due to immune deficiency in HIV infected patients which will eventually expose them to opportunistic infections. The finding in this study is in agreement with that of Hadler, Judson and O'Maley *et al.;* (1991)[13] who found that 21% of HIV positive men who were exposed to HBsAg developed chronic HBsAg infection compared with only 7% of the HIV negative men.

Since none of the control subjects tested positive for HCV, it might also be as a result of the suppressed immune system that enable the HIV positive subjects to be co- infected with HCV. None of the patients was co- infected with HBV and HCV at the same time. The most important risk factors for

hepatotoxicity found in this study include the co-infection with Hepatitis B Virus or Hepatitis C Virus.

In this study, we conclude that HIV infection is a predisposing factor to infection with HBsAg or HCV. Since HIV infected patients with HBsAg/HCV co-infection respond less to HAART, additional concern and care must be taken in order to minimize the complications associated with the increasing use of HAART.

The finding of the study recommend that hepatitis viral co-infection status of the HIV-positive patients on ART should be assessed occasionally. It is also proposed that the testing of HIV positive patients for HBsAg / HCV may be helpful in the choice of therapy in these patients. The HIV positive patients co-infected with hepatitis B or C virus should equally be treated for the co-infection because the co-infection is one of the risk factors for developing hepatotoxicity in HIV infected patients.

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TABLE 1: Shows HBsAg and HCV Screening results of HIV positive patients on ART and those that are not on ART.

		HBsAg	HCV
CONTROL SUBJECTS	n =100	1(1%)	0
HIV POSITIVE PATIENTS ON ART.	n =100	20 (20%)	23 (23%)
HIV POSITIVE PATIENTS NOT ON ART.	n =100	18 (18%)	16 (16%)