

**SURVEY OF HEPATITIS C VIRUS ANTIBODIES IN HIV PATIENTS ATTENDING GENERAL HOSPITAL SULEJA, NIGER STATE, NIGERIA.**Ya'aba Y<sup>1</sup>, Mohammed SB<sup>1</sup>, Uba A<sup>2</sup>, Ibrahim K<sup>1</sup> and Oladosu OP<sup>1</sup><sup>1</sup>Department of Microbiology and Biotechnology,

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Worldwide, hepatitis C virus (HCV) accounts for greater part of chronic infections with an estimated prevalence of 3% constituting a population of between 130-170 million people globally and about 4 to 5 million persons are co-infected with HIV. HCV co-infection with HIV affects disease progression and management in these patients. This study determined and evaluated the prevalence of hepatitis C virus co-infection among HIV patients, accessing healthcare at General Hospital Suleja, Niger State, Nigeria. A total of 554 venous blood samples were collected from HIV sero-positive persons at the ART clinic of the hospital. The screening for HCV was based on the presence of anti-HCV antibodies using rapid enzyme linked immunosorbent assay (ELISA). The ELISA positive samples were further confirmed with third generation rapid ELISA HCV kit (ORTHO HCV version 3.0 ELISA). Of the 554 patient screened 26(4.7%) were positive for HCV while 528(95.3%) tested negative. Female population had a higher prevalence of 18(3.3%) while male had 8(1.4%). Analysis of the prevalence based on age group showed that age group 28-37 had the highest prevalence of 11(1.99%), closely followed by age group of 40-49 with 8(1.44%) and age group of 20-29 had 4(0.72%). The study showed that there is epidemic of co-infection of HCV with HIV. It is recommended therefore, that all HIV infected persons be screened for HCV in order to offer effective management of those co-infected.

**Keywords: Hepatitis C Virus, HIV, Prevalence, Co-infection, HAART**

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## Introduction

Worldwide, it is estimated that 130-170 million persons are chronically infected with hepatitis C virus (HCV), which accounts for 800-10000 deaths each year. Out of this population, approximately 4 to 5 million persons are co-infected with human immunodeficiency virus (HIV). In a similar study conducted in North Central Nigeria, it was estimated that 4.7% of a total population of 2,322 HIV infected persons tested, were HCV antibody positive [27]. HCV is a life threatening viral infection of the liver and it is transmitted primarily through infected blood and blood products. The infection is often described as "silent killer" because people may be infected for up to 30 years and will not exhibit any symptom [22].

Co-infection of HIV with HCV is a growing public health concern. Both infections are spread in similar ways, notably; through sharing of needles in drug injection users, sexual activities and contaminated blood and blood products. Studies have shown that HIV infection leads to a more aggressive hepatitis C virus and higher risk of liver damage [14], which is now a leading cause of death in HIV-infected patients [20].

Nigeria is having high burden of viral hepatitis. About 75% of the Nigerian population is likely to have been exposed to the hepatitis C virus at one time or the other in their life time. It was estimated that 7% of these infected individuals will die from its complications [18]. Other individuals that are at risk include intravenous drug users, prison inmates, recipients of clotting factor concentrates, recipients of blood transfusions, or donated organs from a donor who later tested positive for HCV and longtime hemodialysis patients. Moreover, persons with known exposures to HCV, HIV-

infected persons and infants born from infected mothers are also at risk of contracting these viruses [1] [4].

HIV/AIDS epidemic in Nigeria has extended beyond the commonly classified high-risk groups to the general population. The current HIV sero-prevalence in adult Nigerians is estimated at 3.2% [10]. Viral hepatitis and HIV/AIDS having become so intertwined constitutes a major public health problem in Nigeria [9]. In spite of this, there is scanty information about hepatitis C virus and HIV co-infection in Nigeria [3, 13]. Globally, more attention is being given to HCV-HIV co-infection as a result of the higher frequency of chronic diseases, frequent impairment of the immune system recovery after initiation of antiretroviral therapy and complications in treatment of co-infections [20].

This study was aimed to determining the prevalence of HCV co-infection with HIV in patients receiving care at General Hospital Suleja. This is with a view to providing baseline data for public health policy formulation and awareness on hepatitis C virus in this HIV endemic era.

## Materials and Methods

### Study Area

Suleja is a local government area in Niger State that lies on latitude 7° 11<sup>0</sup>E and longitude 9°11<sup>0</sup>N with a population estimate of about 216, 578. Suleja, the capital of Suleja emirate and sometimes confused with the nearby city of Abuja due to its proximity and the facts that it was originally called Abuja before the Nigeria government adopted the name for its new Federal capital territory in 1976 [26].

### Ethical Considerations

Ethical clearance and approval for the study was sought from the Niger State Hospital Management Board, Minna, Niger State, in accordance with the code of ethics for biomedical research involving human subjects. The participants were enrolled after they were sufficiently counseled and informed consent obtained with the assurance that all information would be treated with utmost confidentiality.

### **Study Design**

This work was a prospective study. The enrollment of the participants was non-randomized and they were consented to participate in the study. The Participants were recruited into the study when found to be HIV positive. The participants were screened for HCV antibodies using rapid enzyme linked immunosorbent assay (ELISA) system, the reactive patients were further confirmed using third generation ELISA.

### **Study Population**

A total of five hundred and fifty four (554) venous blood of adults living with HIV/AIDS consisting of both males and females of various ages 20-60years presenting at the ART clinics of General Hospital Suleja, who agreed to participate in the study were collected from May to November 2013.

### **Sample Collection and Processing**

Five milliliters (5ml) of blood were carefully drawn from the veins of each participant into a well labeled sterile EDTA Vacutainer® blood sample tubes. The blood was allowed to clot before centrifugation at 1500 xg for 15 minutes according to the standard protocol. The plasma samples were separated into 2 ml cryovial containers and stored at -20°C until ready for testing.

### **Hepatitis C antibody assay**

Serum samples from 554 confirmed HIV positive individuals were assayed for the presence of antibodies to HCV. Detection of

HCV antibodies was carried out using rapid chromatographic immunoassay HCV kits (ACON laboratories Inc. USA). Hepatitis C positive samples were confirmed using third generation rapid enzyme-linked immunosorbent assay (ELISA) (ORTHO HCV version 3.0 ELISA) (Ortho-Clinical Diagnostics, Raritan, NJ, USA), according to manufacturer's instructions.

### **Statistical Analysis**

All statistical analyses were performed using Statistical Product and Service Solution (SPSS) software (version 16.0, SPSS, Chicago, USA). p values of less than 5% ( $p < 0.05$ ) were considered to be statistically significant. The prevalence of Hepatitis C co-infection (HCV) was determined from seropositive individuals and expressed as a simple percentage.

### **Results**

Of the 554 HIV-infected patients studied, 217(39.2%) were males and 337(60.8%) females. The age range of the patients in this study was 20-60 years and 26(4.7%) had antibodies to HCV. The prevalence of HCV antibodies was higher among the females 18(3.3%) than males 8(1.4%). Statistical analysis showed no significant difference ( $p < 0.05$ ).

Age related prevalence of HCV antibodies in HIV infected patients was assessed and results showed that patients within the age group of 30-39 years had the highest prevalence of (1.99%) followed by age group of 40 – 49 years (1.44%) and 20-29 years (0.72%) respectively. The least prevalence of 0.54% was observed among the age group of 50-59 years. No significant difference was observed in association between age group and prevalence of HCV antibodies ( $p < 0.05$ ) (Table 1).

**Table 1: Prevalence of HCV antibodies in the HIV infected patients according to age group**

Age Group	Number of Patients	Number Positive Patients
20-29	109 (19.7%)	4 (0.72%)
30 – 39	218 (39.4%)	11 (1.99%)
40 – 49	174 (31.4%)	8 (1.44%)
50 – 59	37 (6.68%)	3 (0.54%)
≥ 60	16 (2.89%)	0 (0%)
Total	554 (100%)	26 (4.7%)

**Discussion**

It has been established from this study that HCV infection is existing among HIV patients attending General Hospital Suleja Niger State, thus indicating that inhabitants of Suleja, are at risk of infection, since the study shows a prevalence rate of 4.7%. The prevalence of 4.7% co-infection of HCV in HIV infected patients in this study, is in agreement with 4.8% reported by Jesse *et al*, (2008) in Ibadan, though lower than 8.2% reported by Agwale *et al*, (2004) in north Nigeria, Forbi *et al*, 2007 reported 11.1% in Keffi and Inyama *et al*, 2007 reported 5.7% from Jos in Nigeria. The factor responsible for these regional variations are unclear, although the reported co-infection rates of HCV in HIV patients have been variable Worldwide depending on the geographic

regions and risk factors [7] [24]. These could be responsible for the decrease in the prevalence observed in this study. Madhava *et al.*, (2002) also reported a co-infection rate of 5.1% among the high-risk populations in Nigeria. The HCV co-infection among HIV-infected patients have been reported frequently across geographical regions of Nigeria in agreement with variations noticed in this study. This co-infection is non-negligible, and patients co-infected with these two viruses should receive special care, as it is known that HCV infection causes increased morbidity and mortality in HIV-positive patients [5] [19].

This study showed that the prevalence is higher among the females 18(3.3%) compared to the males 8(1.4%) which shares a concordant with the report of Ejele *et al.*, (2006), who recorded higher prevalence of

3.8% among females compared to 2.4% among males in Niger Delta, Nigeria. Although, Mutimer *et al.*, (1994) and Inyama *et al.*, (2005), observed in separate studies that the prevalence of viral hepatitis is higher in male Nigerian patients than the females, which might be due to the higher frequency of exposure to infection as a result of occupation and social behavior by men [13]. There was no statistically significant difference ( $p>0.05$ ) between the prevalence rates of the female and male individuals.

Co-infection with Hepatitis C virus, in HIV infected patients often complicate the clinical course and adversely affect therapeutic management of HIV disease. The prevalence of hepatitis C virus co-infection with HIV varies widely across different studies and has been associated with variations in the distribution of risk factors and geographic location of the studied population. Chronic viral hepatitis is a leading cause of liver-related death among patients with HIV/AIDS worldwide [23]. It is now known that highly active antiretroviral therapy (HAART) has transformed HIV/AIDS from a fatal illness into a manageable chronic infection and has been shown to be able to restore CD4+ cells in HIV infected patients[21]. Early diagnosis of HCV in HIV individuals have not been given enough priority it deserves in Nigerian health care delivery system, This is due to the low awareness of the burden and risk of HCV infection in HIV infected patients. The gains of HAART could be compromised by co-infection with hepatitis viruses as they are known to have adverse effects on the prognosis of HIV [11].

In conclusion, this study was able to demonstrate that there is epidemics of co-infection of HIV and hepatitis C virus. The high prevalence 4.7% of hepatitis virus co-infection with HIV is a cause for concern because co-infection of HIV with HCV

affects the prognosis of HIV disease, it can contribute to the increase in morbidity and mortality rate among these individuals as a result of rapid progression to AIDS and hepatocellular carcinoma. Therefore, it is recommended that all HIV positive patients should undergo screening for hepatitis C virus infection. It is also recommended that the government should include hepatitis C screening among mainstream tests in health care delivery system to reduce the spread of this silent epidemic.

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