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THE PREVALENCE OF HEPATITIS C ANTIBODIES IN PATIENTS WITH HIV INFECTION IN THE NIGER DELTA OF NIGERIA

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ABSTRACT

BACKGROUND

Hepatitis C virus (HCV) and human immunodeficiency virus (HIV) infection have emerged as global public health problem and a significant cause of mortality in Nigeria and many parts of the world

AIM: To study the prevalence of HCV in sero-positive HIV patients in the Niger-Delta region of Nigeria.

PATIENTS & METHODS

This study was undertaken among 342 HIV sero-positive patients recruited into the antiretroviral therapy pilot project in the University of Port Harcourt Teaching Hospital, comprising of 192 males and 150 females screened for anti-HCV antibodies.

RESULTS

Anti HCV antibodies were detected in 3 (0.9%) of patients infected with HIV. Co-infection rate was higher in females 2 (1.3%) compared to males 1 (0.5%) ($P < 0.05$). HIV and HCV co-infection rate was highest in the 30 - 39 years age group. Both single/unmarried and married subjects had similar rates of co-infection 2/195 (1.03%) and 1/100 (1%). Among the different occupational groups, commercial sex workers and long distance drivers had the highest co-infection rates of 3.3% and 2.2% respectively. The highest co infection rate occurred in persons of low socio economic level with informal education and primary education (1.8% and 1.1% respectively).

CONCLUSION

This study shows a 0.9% HCV infection rate among HIV- infected patients in the Niger Delta of Nigeria and describes the groups that are at risk. This calls for urgent health education of people in the Niger Delta Area of Nigeria and the institution of preventive measures to check the further spread of both infections.

Key Words: Anti HCV, HIV infection, co-infection, sero-epidemiology, Port Harcourt, Nigeria.

INTRODUCTION

Hepatitis C Virus (HCV) and human immunodeficiency virus (HIV) infections have emerged as a global public health problem and a significant cause of mortality and morbidity in Nigeria and many parts of the world.

Both Human Immunodeficiency Virus (HIV) and Hepatitis C Virus (HCV) are highly prevalent worldwide. As many as 3.9 million people in the United States and 200 million people worldwide are estimated to have been infected with hepatitis C¹. Globally the epidemic of HIV/AIDS is worse than ever with an estimated 23 million people living with HIV/AIDS². Overall, approximately 14% of HIV sero-positive patients in America and 1.4% of the general population are infected with HCV³. The prevalence of HIV in Nigeria is still on the increase from 1.8% in 1991 to 5.4% in 1999 and 5.8% in 2001, representing an increase of 129%. In the oil - rich Rivers State of Nigeria, the sero-prevalence of HIV has increased from 3.3% in 1999 to 7.6% in 2001, an

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increase of about 120%⁴. In this era of highly active antiretroviral therapy, hepatitis C - related liver disease has emerged as a significant cause of morbidity and mortality⁵. The United States public health service and infectious disease society of America considers hepatitis C to be important in their report on the management of opportunistic infection in HIV - infected persons⁶.

The prevalence of anti-HCV at a sexually transmitted disease clinic is 5 to 15 times that of the general population⁷. A study that examined the prevalence of HCV infection in HIV - infected homosexual men found a prevalence of approximately 4 - 8% and that the incidence of HCV was 8.5 times greater in homosexual men with HIV compared to those sero-negative for HIV⁸. Approximately 50% to 90% of persons who acquire HIV from injecting drugs and more than 50% of those who were exposed to non-screened, non heat-treated blood products had or have HCV and HIV co- infection⁹. Whereas spontaneous recovery from acute HCV infection occurs in approximately 20% of HIV-uninfected persons, HCV clearance is observed in only 5% to 10% of HIV - infected persons¹⁰.

Among patients receiving highly active antiretroviral therapy (HAART), HIV/HCV co-infected person has a modestly increased risk of disease progression to a new AIDS defining event and death¹¹. Again the magnitude of CD4 cell restoration following HAART was significantly less than that observed in HCV uninfected persons¹².

There is paucity of data on the prevalence of hepatitis C among HIV - infected Nigerians and it is largely unknown to what extent HCV affects HIV - infected persons in sub-Saharan Africa. Our study is an effort on a large scale to examine the sero-epidemiology of co-infection of HIV/HCV in the Niger Delta region of

Nigeria. Port Harcourt is the capital of Rivers State in the Niger Delta area of Nigeria. It is a cosmopolitan oil - rich state hosting the presence of various multinational oil companies with a high influx of migrant workers. The economic activity of the people is mainly agriculture, fishing and hunting. In this study we sought to investigate the prevalence of HCV infection among HIV - infected persons in the Niger Delta area of Nigeria. Data generated may help prioritize the need to promote preventive measures aimed at arresting further spread of both infections in the Niger Delta region in particular and Nigeria in general, and to alert physicians caring for patients with HIV and HCV co-infection of the need to update information with which to make rational decisions about HIV/HCV co-infection. This will ensure that morbidity and mortality are minimized and quality of life and medical cost are optimized.

PATIENTS MATERIALS AND METHODS

SUBJECTS:

Blood samples were collected from a total of 342 HIV - positive patients (with 338 positive for HIV- 1, 2 for HIV- 2 and 2 for dual HIV- 1 and 2 infections) presenting to the Haematology Clinic of the University of Port Harcourt Teaching Hospital, Nigeria between August 2001 and March 2003. Socio-demographic data (age, sex, marital status, occupational group and level of educational attainment) were obtained by use of a questionnaire, from all study subjects. Written informed consent was obtained from all study subjects.

Method:

Whole blood were collected from each study subject and centrifuged. Serum samples were separated, aliquoted, labelled and stored at - 20°C prior to

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testing. All samples were tested by the commercially available Clinotech anti-HCV test strips (Clinotech Diagnostics, Canada). This is a one - step test strip for the qualitative detection of antibodies to HCV. All initially positive samples were subsequently tested using a second generation Trinity Biotec Enzyme Linked Immunosorbent assay (Trinity Biotec Plc Ireland), an immunochromatographic method for the quantitative detection of antibodies to HCV. All the HIV positive patients had their sero-status confirmed using a double ELISA technique involving the World Health Organization (WHO) approved Immunocomb HIV 1/2 kits (Organics, Israel). This assay is an immunochromatographic test for the qualitative and differential detection of antibodies to HIV in human serum) and Recombigen HIV 1/2 kits (Cambridge Diagnostic, Ireland). This assay utilizes highly purified immunodominant antigens of the core and envelop proteins of HIV - 1 and an immunodominant epitome of the HIV - 2 envelop prepared by peptide synthesis to ensure specificity.

STATISTICAL METHOD

Statistical analysis was performed using a statistical software (Version 9 SPSS, Inc Chicago IL). Student t-test and chi-square test were used to assess the significance of differences among groups. A p - value of ≤ 0.05 was considered significant in all statistical comparisons.

RESULTS

A total of 342 serum samples from HIV - infected subjects were tested for anti - HCV antibodies. The overall anti - HCV prevalence was 3 (0.9%) with a higher female prevalence 2/150(1.3%) compared to 1/192 (0.5%) for males ($p < 0.05$). The highest prevalence of HCV was found in the 30-39 years age group 1/75 (1.4%) followed by the 40- 49 years age group 1/72 (1.3%). Figure 1 show the age distribution of Anti-HCV positivity in HIV - infected patients. Table I shows that the highest gender related distribution of anti - HCV positivity in HIV patients occurred among females 2/150 (1.3%) compared to males 1/192 (0.5%) $p < 0.05$. Single unmarried subjects had the highest anti-HCV burden 2/195 (1.03%) followed by married subjects 1/100 (1.0%).

Table II shows that the highest prevalence among the occupational groups occurred among commercial sex workers (CSW) 1/30 (3.3%) followed by long - distance drivers 1/45 (2.2%).

Table III shows that the level of educational attainment plays a role in anti-HCV positivity in HIV - infected patients. The highest anti-HCV infection occurred among subjects who had no formal education 2/110(1.8%) followed by those who had only primary education 1/95 (1.1%). ($p < 0.05$).

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Figure I: Age-specific seroprevalence of anti-HCV in HIV-infected subjects

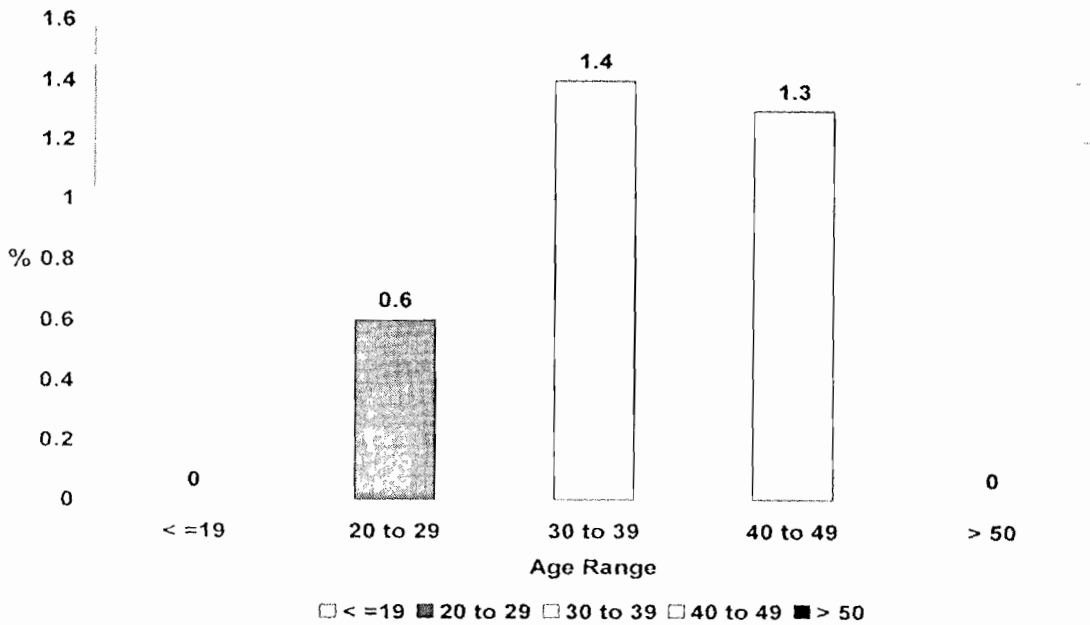


Table I: Gender distribution of Anti-HCV positivity in HIV-infected subjects

GENDER	NUMBER SCREENED	NUMBER ANTI-HCV POSITIVE	% ANTI-HCV POSITIVE
MALE	192	1	0.5
FEMALE	150	2	1.3

Table II: Distribution of anti-HCV positivity based on occupational groups

OCCUPATIONAL GROUPS	NUMBER ANTI-HCV SCREENED	NUMBER ANTI-HCV POSITIVE	% ANTI-HCV POSITIVE
APPLICANTS	75	1	1.3
ARTISANS	40	-	-
COMMERCIAL SEX WORKERS (CSW)	30	1	3.3
CIVIL SERVANTS	32	-	-
DRIVERS	45	1	2.2
FARMERS	10	-	-
OIL WORKERS	50	-	-
STUDENTS	60	-	-

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DISCUSSION

Chronic HCV infection is common in HIV-infected persons and represents an increasingly important medical problem worldwide. Emerging data indicate that HCV and HIV co infection complicates the management of both diseases potentially limiting the effectiveness of therapy and increasing the risk of toxicity. It is largely unknown to what extent co-infection of HIV and HCV affects many of the world's developing countries particularly sub-Saharan Africa. Our study represents the first large scale effort to examine the prevalence of HIV/HCV co-infection in the oil - rich Niger Delta Region of Nigeria. In this study we observed an anti-HCV positivity of 3 (0.9%) in our series of HIV - infected patients. This value is however lower than the prevalence of 14% obtained among HIV-infected Americans¹³. The significant association between HCV and HIV infection is mainly attributed to their common modes of transmission, predominantly; blood exposure, high risk sexual activity and intravenous drug use. The highest co-infection rate was found in this study among the 30-39 years age group. This finding is at variance with a previous study¹⁴ which found HCV seroprevalence significantly higher in older individuals (> 39 years). This observation is ominous for the oil - rich Niger Delta since the biologically, socially and economically productive groups of the population are the most affected by both infections.

Females had a higher co-infection rate (1.3%) compared to males (0.5%). This finding is at variance with previous report¹⁵ which showed a higher male prevalence. This female vulnerability seen in this study may in fact be a reflection of an interplay of biological, cultural and economic factors that makes women more vulnerable to infection with HIV and HCV. Women in the Niger Delta part of Nigeria often

have lower status in society and in sexual relationships in particular. They are more likely than males to be coerced or enticed into sex by someone stronger or richer, raped in war, communal conflict and in youth restiveness which are common occurrences in the Niger Delta as a result of alleged marginalization of host communities by oil-producing companies.

The prevalence of co-infection was higher among single unmarried subjects (1.03%). This observation may have been accounted for by the fact that single unmarried individuals are more likely than married individuals to maintain multiple sex partners or be commercial sex workers.

Among the occupational groups commercial sex workers (CSW) and long distance drivers recorded the highest rates of co-infection (3.3% and 2.2% respectively). This observation may have been accounted for by the fact that both professional groups are prone to frequent traveling and maintenance of multiple sex partners.

In this study, we observed that HIV/HCV co-infection rate was significantly higher in persons of low socio-economic level 2/110 (1.8%) without formal education 1/95 (1.1%). This observation is consistent with previous report¹⁶ which found a higher prevalence among Peruvians of low socio economic level.

In conclusion, this study confirms a 0.9% prevalence of anti-HCV among HIV - infected persons in the Niger Delta, and pinpoints the age groups, gender, occupational and socio economic groups more at risk. We recommend that data obtained in this study be used as working data in formulating operational and specific health care measures aimed at prevention of HIV and HCV in the Niger Delta. We also recommend that immediate interventional measures be employed by responsible authorities and other non-

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governmental health agencies with the hope of prioritizing preventional measures such as health education of the general Niger Delta population, discouraging practices that promote the transmission of both infections: transfusion of unscreened blood and blood products, injection with unsterilized needles and sharp objects and communal sharing of blades and sharp instruments for scarification, barbing, ear piercing and circumcision, all common high risk practices in the Niger Delta.

We also recommend that commercial sex workers be screened regularly and made to obtain HIV- and HCV - free certificate. All HIV- infected persons without HCV co-infection should be immunized against viral hepatitis C.

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