Seroepidemiology of Hepatitis-B Surface Antigenaemia in HIV Positive Patients

Les patients séro-épidémiologie de l’hépatite B-antigénémie de surface du VIH positifs

T. M. Balogun*, I. O. Durojaiye, A. Sagoe, S. Emmanuel

ABSTRACT
BACKGROUND: Hepatitis B virus (HBV) co-infection with HIV is a potential and significant cause of mortality and morbidity in HIV-positive patients.

OBJECTIVE: This study was undertaken to determine the prevalence of hepatitis B surface antigen (HBsAg) among HIV positive patients and to identify the risk groups for HIV/ HBV co-infection among these patients.

METHODS: The diagnosis of HIV infection was made using Determine® rapid screening kits and reactive samples were confirmed by enzyme linked immunosorbent assay (ELISA). The marker for HBV was HBsAg which was detected using an ELISA technique.

RESULTS: HBsAg was repeatedly detected in 29 (28.4%) of HIV-positive patients. Ninety-eight percent of the subjects were confirmed positive for HIV–1 and 1.9% for HIV–2. There were 32 (31.4%) males and 70 (68.6%) females aged 20 to 75 years (mean +SD: 40+.11.7). HIV / HBV co-infection rate was highest in the age group 31–40 years. More males [12 (37.58%)] than female subjects 17/70 (24.3%) were HIV / HBV co-infected, (p >0.05).

CONCLUSION: There is a high prevalence of HBsAg in HIV positive patients. WAJM 2010; 29(3): 169–173.

Keywords: Hepatitis B; seroepidemiology; HIV-positive patients.

RÉSUMÉ
CONTEXTE: L’hépatite B (VHB) co-infection avec Le VIH est une cause potentielle et significative de la mortalité et la morbidité chez les patients VIH-positifs.

OBJECTIF: Cette étude a été entreprise pour déterminer la prévalence de l’antigène de surface de l’hépatite B (HBsAg) chez les VIH patients positifs et d’identifier les groupes à risque pour le VIH / VHB co-infection chez ces patients.

MÉTHODES: Le diagnostic d’infection à VIH a été fait à l’aide Déterminer des kits de dépistage rapide et ® échantillons réactifs ont été confirmées par dosage immunoenzymatique (ELISA) Le marqueur du VHB a été HBsAg a été détecté en utilisant un technique ELISA.

RÉSULTATS: HBsAg a été détecté à plusieurs reprises dans 29 (28,4%) des patients VIH-positifs. Quatre-vingt-huit pour cent des sujets ont été confirmés positifs pour le VIH-1 et 1,9% pour le VIH-2. Il y avait 32 (31,4%) hommes et 70 (68,6%) femmes âgées de 20 à 75 années (Moyenne SD: 40 + .11.7). VIH / VHB co-infection rate le plus élevé a été dans le groupe d’âge 31-40 ans. Plus d’hOMES [12 (37,58%)] que 17/70 sujets féminins (24,3%) étaient VIH / VHB co-infectés, (P> 0,05).


Mots-clés: hépatite B; séroépidémiologie, le VIH-positive patients.

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Abbreviations: AIDS, Acquired Immunodeficiency Syndrome; ELISA, Enzyme Linked Immunosorbent Assay; HBsAg, Hepatitis B Surface Antigen; HBV, Hepatitis B Virus; HIV, Human Immunodeficiency Virus;
INTRODUCTION

HBV infections occur worldwide but are endemic in south East Asia and sub-Saharan Africa including Nigeria. Both Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV) infections are a serious global public health problem and significant causes of morbidity and mortality in Nigeria and many parts of the world. Epidemiologic studies indicate an HBV prevalence rate of 1–2% in the western world and 10–20% in the endemic regions of South East Asia and sub-Saharan Africa. Hepatitis B surface antigen (HBsAg) is the hallmark and the most sensitive antigenic marker for the presence of HBV infection. Previous studies in Nigeria have documented prevalence rates of 7–21% for HBsAg in blood donors who may be taken to represent the population at large.1,2

In Lagos, prevalence rate of HBV among the normal population has been reported as 4.4–9.2% 3-10. Of the 2 billion people who have been infected with HBV, more than 350 million have chronic infections.11 These chronically infected persons are at high risk of death from cirrhosis of the liver and liver cancer, diseases that kill about one million persons each year.11

HBV major routes of transmission are shared with HIV: exchange of infected body fluids through sexual contact-homosexual and heterosexual, injection drug use, contaminated needles, instruments and sharp objects, transfusion of blood and blood products and vertical transmission of larger studies.

SUBJECTS, MATERIALS, AND METHODS

One hundred and two consecutive adult Nigerian patients confirmed for HIV and attending the antiretroviral therapy clinics, Lagos State University Teaching Hospital in Lagos, South west area of Nigeria between March and August 2006 were studied. The inclusion criteria were: age greater than 18 years and HIV positivity. After informed consent was obtained from the subjects, structured questionnaires were administered to obtain information on demographic data of age, sex, marital status, occupation and exposure to risk factors which predispose to acquisition of HBV co-infection. The study protocol was approved by LASUTH Ethical Committee.

About five milliliters of whole venous blood was collected from each of the subjects into serum bottle. Serum samples were separated by centrifugation and stored at –20°C until analyzed. Each

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>HBsAg Positive</th>
<th>HBsAg Negative</th>
<th>Total Screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 29</td>
<td>6 (33.3)</td>
<td>12 (66.7)</td>
<td>18 (17.6)</td>
</tr>
<tr>
<td>30 – 39</td>
<td>13 (34.2)</td>
<td>25 (65.8)</td>
<td>38 (37.2)</td>
</tr>
<tr>
<td>40 – 49</td>
<td>4 (17.4)</td>
<td>19 (82.6)</td>
<td>23 (22.5)</td>
</tr>
<tr>
<td>50 – 59</td>
<td>4 (26.7)</td>
<td>11 (73.3)</td>
<td>15 (14.7)</td>
</tr>
<tr>
<td>60 – 69</td>
<td>2 (28.6)</td>
<td>5 (71.4)</td>
<td>7 (6.9)</td>
</tr>
<tr>
<td>70 – 79</td>
<td>0 (0.0)</td>
<td>1 (100%)</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Total</td>
<td>29 (28.4)</td>
<td>73 (71.6)</td>
<td>102 (100.0)</td>
</tr>
</tbody>
</table>

* Chi-squared = 36.5; p = 0.07; †, Chi-squared = 3.84, p = 0.83

Table 1: Distribution of HBsAg Positivity in HIV-positive Patients by Sex and Age
serum sample was analyzed for the presence of HBsAg using commercially available fourth generation ELISA kits (Dialab, Austria) which had 99.87% specificity and 100% sensitivity. Positive samples were repeatedly reactive. All subjects were initially screened by WHO approved Determine® very rapid kit which has 100% sensitivity and 99.6% specificity for HIV 1 and 2. Positive serostatus was confirmed with ELISA based Immunocomb I &II combfirm kits (Oorgenics, Israel).

The data were analyzed using the Statistical Package for Social Sciences (Version 9, SPSS). Chi-square test was used to assess the significance of differences among groups. A p-value of less than or equal to 0.05 was considered significant in all statistical analysis.

**RESULTS**

Subjects studied consisted of 32 (31.4%) males and 70 (68.6%) females. Of this, 29 were HBsAg positive giving an overall prevalence of 28.4%. The age range of subjects was 20–70 years (mean = 38 years).

Seroprevalence of HBsAg among males was 12 (37.5%) and 17 (24.3%) among females. Ninety eight percent of the patients were confirmed for HIV-1 and 1.9% for HIV-2.

Table 1 also shows that there were more female subjects and that more males 12 (37.5%) are HIV/HBV co-infected than females 17 (24.3%).

Table 2 shows that HIV/HBV co-infection was highest in the 30–39-year age group with 13 (34.2%), closely followed by 20–29 years with 6 (33.3%), the lowest prevalence occurred in 70–79 years group in which had no case.

Table 2 shows that in relation to marital status, widowed patients had the highest HIV/HBV co-infection rate of five (71.4%) followed by single/unmarried subjects with 6 (40.0%) and married subjects 17 (25.0%), while the divorced group showed the lowest co-infection rate of one  (8.3%). Also shown in Table 2 is that there were variations in the HIV/HBV co-infection rate among the different occupational groups with the highest rate occurring among drivers two (100%), followed by civil servants eight (33.3%) and applicants two (28.7%).

Table 3 shows that HIV/HBV co-infection rate was higher among patients who admitted to multiple sex partners 11 (32.4%), than without 18 (26.5%) and that patients with history of injection drug use were fewer and also have lower HIV/HBV co-infection rate of three (21.4%) than those with no history of injection drug use with 26 (29.5%).

**DISCUSSION**

In this study, we observed HBsAg positivity of 28.4% in HIV positive patients. Our finding in this study is in agreement with previous reports of 28.7% co-infection rate from North Central Nigeria and 33.8% in India. The value obtained in this study is however higher than 15% by Baba et al. and 9.2% by Lesi et al. in the Niger Delta region of Nigeria, and Thailand but lower than a report of 70.5% in Kano, Nigeria and a prevalence of 41% in Johannesburg, South Africa. Variations in prevalence rates may be due to the differences in sensitivity and specificity of various
The results of this study show that co-infection with HIV and HBV affects all professional groups. The prevalence of HIV/HBV co-infection was higher among subjects with positive history of multiple sex partners than those without, although the difference was not statistically significant.

In conclusion, our study indicates an HBsAg prevalence of 28.4% in HIV infected patients in a Lagos hospital and identifies the age group, gender and occupational groups more at risk. We recommend that the results obtained in this study be used as a working data on the prevalence of HBsAg among HIV infected individuals in Lagos, Nigeria and for the estimation of chronic liver disease burden due to HBV among HIV infected patients. Emphasis should be on interventions for the prevention of HIV and HBV transmission. All HIV infected people should be screened for HBV co-infection and those found negative would be immunized against hepatitis B virus. Physicians managing people living with HIV infection should assess the HBV status in all patients prior to the initiation of antiretroviral therapy as this would guide correct choice of therapy, and reduce morbidity and mortality from antiretroviral drug hepatotoxicity. Adherence to antiretroviral therapy would also increase since the patients are more likely to adhere on less toxic regimen.

Future studies should assay other serological markers of HBV infection in these patients as HIV/HBV co-infection rate may probably be higher than the rates observed in this study using only one marker.

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Males had a higher rate (37.5%) of co-infection with HIV/HBV compared to females with (24.3%) in this study, p>0.05. This finding is comparable with previous reports such as from Jos, North Central Nigeria and India. However, our finding is at variance with the finding in the Nigeria’s Niger Delta region and Kano where females were found to have a higher rates of HIV/HBV co-infection.

The prevalence of HIV/HBV co-infection was found in this study to be higher among widowed and single unmarried subjects. The difference was however, not statistically significant p>0.05. Among the occupational groups, long distance drivers and applicants had the highest co-infection rates with HIV/HBV, p>0.05.
doctors from Morbid Anatomy and Histopathology Dept. who assisted with sample collection i.e. Drs Bamiro and Oyewole.

Duality of Interest

This study is sponsored by Strides Vital Nigeria Ltd. Neither profit nor financial gain is attached to the conduct of this study/research.

REFERENCES: