

VOLUNTARY COUNSELLING AND TESTING FOR HEPATITIS B VIRUS IN APPARENTLY HEALTHY SUBJECTS OF A NIGER DELTA REGION, NIGERIA

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Abstract: Sera of some individuals (260 males and 230 females) resident at a Niger Delta region of Osisioma Ngwa Local Government Area of Abia State, Nigeria were tested for the presence of antibodies to hepatitis B virus (HBV) using the rapid chromatographic and enzyme-linked immunosorbent assays (ELISA). **Out** of a total of 490 collected and examined samples, 4.08% tested positive for HBV antibodies. There was a significant difference ($p < 0.05$) between the prevalence of HBV in the males (5.77%) and the prevalence of the virus in the females (2.17%). The age- and sex-stratified distribution of HBV amongst the study population shows that the seroprevalence of HBV was highest (11.11%) in individuals that were between the ages of 13 and 22 years and least (3.45%) in individuals that were between the ages of 23 and 32 years. Males that were between the ages of 13 and 22 were more significantly infected than females within that age group. None of the males and females that were more than 23 years was infected with the virus. In the wake of the present results there is need for personal and governmental preventive measures for HBV control to be mounted in this study area. Such extensive surveillance and intervention strategies must ensure that all individuals at risk infection be vaccinated. Post-exposure prophylaxis with hepatitis B immunoglobulin should also be administered to non-immune individuals.

Key words: Voluntary, counselling, testing, HBV, ELISA, Niger Delta, Nigeria

INTRODUCTION

Hepatitis B virus (HBV) is one of the most common viral infections causing serious public health problems worldwide. The prevalence and modes of transmission of HBV that have been documented globally are varied and showed the importance of perinatal, horizontal, sexual and parental transmission (Martinson *et al.*, 1996; El-Sayed *et al.*, 1997; Kumar *et al.*, 1997; Ahmed *et al.*, 1998; Chhour *et al.*, 2002). The contributory role of HBV to the aetiology of chronic liver disease (CLD) and hepatocellular carcinoma (HCC) has been

investigated however, this relationship is yet to be fully elucidated (Donato *et al.*, 1998; Omer *et al.*, 2001; Ola *et al.*, 2004). Nonetheless, these observations have led to global hepatitis B prevention schemes including blood bank safety programmes and immunization of high risk groups, women of child bearing age or babies and infants (CDC, 2000; 2001; 2005; Leyssen *et al.*, 2000).

In the wake of the discovery that in endemic areas of Africa, the epidemiological patterns differ from those seen in North America and Western Europe and in view of the fact that very many data exists this decade on the prevalence of hepatitis B virus in Nigeria. However, very few exists on individuals who voluntarily came in for testing at a designated health

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facility located at a Niger Delta area of South Eastern Nigeria (Amazigo and Chime, 1990; CDC, 2005), this work therefore was undertaken to determine the prevalence of hepatitis B virus in Osisioma Ngwa L.G.A of Abia State, Nigeria.

MATERIALS AND METHODS

Study area

Geographically, Osisioma-Ngwa is located in the Niger Delta area of Abia State, South Eastern Nigeria. It lies between latitude 05°42'N - 05°57'N and longitude 07°02'E - 07°02'E and characteristically has a daily temperature range of 19°C-31.5°C, a rainy season from May to October and a dry season from November to April. Most of its estimated 180,800 inhabitants are traders.

Study Population

Blood samples were collected from four hundred and ninety (490) volunteers comprising of 260 males and 230 females, between the ages 3 and 60 years after they were individually voluntarily counselled and tested for HBV antibodies at a designated health facility in Osisioma Ngwa L.G.A of Abia State.

Consent procedure and participation

Informed consent was obtained from the participating laboratory. All blood

collections were voluntary and were obtained according to good clinical practice. To be enrolled, subjects had to agree to be tested for HBV after individual pre-test counselling. The personal data of the participants were obtained through personal interview. The inclusion criteria were healthy-looking subjects resident in the study area for not less than six years, who had no active symptoms for HBV infection and had not received any vaccination against HBV while the exclusion criteria were subjects with active symptoms of HBV infection and had received vaccination against HBV.

Serology

Three millilitres of blood were drawn from each of the subjects through venepuncture, transferred immediately to plain tubes (with no anticoagulant), and immediately centrifuged to separate the sera, which were subsequently screened for HBV antigens using commercial enzyme linked immunosorbent assay kits manufactured by Clinotech Diagnostics and Pharmaceuticals INC. 11:12240 Horseshoe way, Richmond, BC V7A 4X9 Canada (Lot Nos.: H03201C4). This rapid chromatographic immunoassay qualitatively detected hepatitis B surface antigen in serum.

RESULTS

A total of 490 samples from 260 males and 230 females were tested.

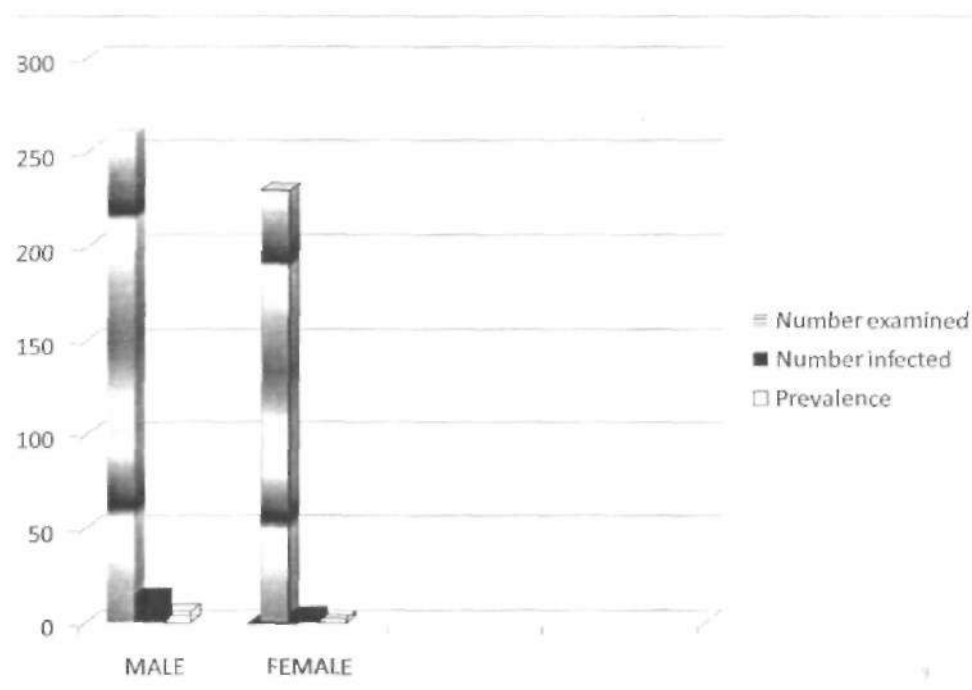


Figure 1: Distribution of hepatitis B virus infection amongst male and female subjects in Osisioma Ngwa

Figure 1, shows the composite distribution data of the virus in the samples. The overall prevalence of HBV infection was 4.08%. There was a significant difference ($p < 0.05$) between the prevalence of hepatitis B virus in the males (5.77%) and the prevalence of the virus in the females (2.17%).

Table 2: Age- and sex-stratified prevalence of hepatitis B virus in Osisioma Ngwa

Age groups (years)	MALES			FEMALES			Total Prevalence (%)
	Number Examined	Number Infected	Prevalence (%)	Number Examined	Number Infected	Prevalence (%)	
3-12	25	5	20	25	0	0	10.0
13-22	20	5	25	70	5	7.14	11.11
23-32	65	5	7.69	80	0	0	3.45
33-42	45	0	0	30	0	0	0
43-52	65	0	0	5	0	0	0
>52	40	0	0	20	0	0	0
Total	260	15	52.69	230	5	7.14	24.56

Table 2 represents the age- and sex-stratified distribution of hepatitis B virus amongst the study population. The seroprevalence of hepatitis B virus was highest (11.11%) in individuals that were between the ages of 13 and 22 years and

lowest (3.45%) in individuals that were between the ages of 23 and 32 years.

Males that were between the ages of 13 and 22 were more significantly infected than females within that age group which showed (0%). None of the males and females subjects whose ages were more

than 23 years was infected with HCV (Table 2).

DISCUSSION AND RECOMMENDATIONS

As far as could be ascertained, this present study is the first population-based, age- and sex-stratified serologic survey of HBV infection in Osisioma Ngwa L.G.A, Abia State. Despite careful attempts to choose a representative sample, there were more males than females surveyed within this Local Government Area. Albeit this, the males were statistically more HBV-seropositive than the females ($p < 0.05$). No reason could be ascribed for this. The results obtained further showed that the individuals in the study area most infected with HBV infection included the males and females who were between the ages of 13 and 22 years. This age group has been shown to belong to the sexually active group (Ola *et al.*, 2004).

Nevertheless, the number of reported cases probably underestimates the extent of HBV transmission in Osisioma Ngwa L.G.A because HBV counselling and testing is routinely carried out in this study area. Furthermore, the fact that the survey was voluntary meant that some cases might have been overlooked. It is probable however, that majority of the individuals with identified infection had high risk behaviour.

At present, a nationwide study of HBV prevalence has not been conducted to show the overall burden of HBV infection. However, this present prevalence study gives an insight into what the situation of the prevalence will be like.

The high prevalence of chronic HBV infection and risk factors for the transmission make prevention and control of HBV high for community health care programmes. Thus, the following recommendations will suffice:

An integrated health education and risk reduction programme should be established in each rural community (CDC, 2005). A system for the periodic evaluation

and updating and improvement and documentation of HBV infection and vaccination should be included in the medical records of the study area. Modalities for the prevention of HBV infection should be incorporated into health education programmes and should take account of information concerning modes of disease transmission, methods of prevention including risk reduction and immunization, disease outcomes and options for treatment (CDC, 2000).

Highly effective and safe vaccines are available to prevent HBV infections. Identification of risk factors and infection status, combined with risk reduction, counselling and substance abuse treatment have the potential of preventing HBV. In addition, identification of patients with chronic HBV infection provides opportunities for medical evaluation and treatment of liver disease to prevent further transmission. Persons with HBV should be counselled regarding drug use, contacts including risk reduction and condom use. They also should be counselled regarding ways to reduce further liver damage including limited alcohol and drug use (CDC, 2000; 2001). Patients with HBV infection should be given appropriate treatment followed with medical checkup (Leyssen *et al.*, 2000).

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