Hepatitis B Surface Antigenaemia in Ogoja Local Government Area of Cross River State, Nigeria
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Abstract

Background: Hepatitis B virus infection is a serious public health problem. The infection causes chronic debilitating conditions like liver cirrhosis and hepatocellular carcinoma. The infection can be prevented by immunization which was introduced into the National Programme on Immunization in Nigeria in 2004. This study was carried out to determine the prevalence of hepatitis B surface antigen among persons born before and after the introduction of Hepatitis B vaccine into the National Program on Immunization. Materials and Methods: this was a retrospective study involving the review of the laboratory records of Uguma Medical Laboratory Ogoja, from January 2014 to August 2015. Results: A total of 1223 persons were tested for hepatitis B virus infection during the study period. Their ages ranged from 2 to 65 years. There were 564 (46.1%) males with a male to female ratio of 1:1.2. The overall prevalence of the infection was 9.2%. The prevalence in children ≤10 years was 3.4%; 8.7% in children 11-15 years and 9.6% in those > 15 years. Conclusion: There is an urgent need for a national policy on catch up vaccination of young children and adults who were born before the introduction of hepatitis B virus vaccine into the National Program on Immunization in 2004.

Keywords: Hepatitis B Virus; Liver Cirrhosis; Vaccination; Nigeria.

INTRODUCTION

Hepatitis B virus infection accounts for 500,000 to 1.2 million deaths each year, making it the 10th leading cause of death globally [1,2]. Over 2 billion people worldwide show some serological evidence of past or current infection among which 350 million are chronic carriers (defined as hepatitis B surface antigen positive for at least 6 months) [2-4]. Chronic hepatitis B virus infection is responsible for 60% to 80% of liver cancers around the world [5].

The West African sub-region has high endemicity rates particularly among infants, due to vertical transmission [6,7]. In Nigeria, the following prevalence have been reported: 14.0% for blood donors, 14.1% for pregnant women attending antenatal clinics; 11.5% for children; 14.0% among adults and 16.0% for studies evaluating children and adults [8]. Since 1992, the World Health Organization (WHO) has recommended the inclusion of hepatitis B vaccination in all national immunisation programs independent of hepatitis B carrier state [9]. In Nigeria, the vaccination against hepatitis B virus was introduced into the National Program on Immunization (NPI) schedule in 2004 [10,11], some 22 years after the vaccine became available in the global market. The implication is that some persons as young as 15 years old today did not benefit from routine hepatitis B vaccine immunization and as such are at risk of contracting the infection. This means that the rate of infection in people 15 years and older will remain high and they will constitute a reservoir for the infection.

In many health facilities across Cross River State, screening for hepatitis B surface antigen through immunochromatographic methods is the commonest screening modality for hepatitis B infection. These investigations are usually carried out in private medical laboratories. We therefore undertook a secondary data analysis of those screened for hepatitis B surface antigen in a private medical laboratory.

MATERIALS AND METHODS

Study Site

The study was a carried out in Uguma medical laboratory located in the semi-urban town of Ogoja in...
Ogoja Local Government Area of Cross River State, Nigeria. The town is made up of middle to low income earners. The population was projected to be 198,350 by 2011 based on the 2006 population census figures [12]. There are primary and secondary health facilities in Ogoja including stand-alone medical laboratories. Uguma Medical Laboratory is one of the stand-alone facilities which was established in 1995 and has served the residents of Ogoja for over 20 years. Among the tests carried out in the laboratory is screening for hepatitis B surface antigen. Uguma medical laboratory on the average attends to 5 to 10 clients a day.

**Study Design**

This was a retrospective study involving the review of the laboratory records of the Uguma Medical Laboratory from January 2014 to August 2015.

**Ethical Consideration**

Ethical approval for the study was obtained from the Health Research Ethics Committee of the Government of Cross River State of Nigeria Ministry of Health (CRSMOH/RP/REC/2018/556)

**Data Analysis**

Data was analysed with SPSS Statistical Software Student Version 16.0. The level of significance was set at p < 0.05.

**RESULTS**

A total of 1223 persons were tested for hepatitis B virus infection during the period under review. The age and sex distribution of the study subjects is shown in table 1. The prevalence of HBV infection in the general population and the age groups specific prevalence are shown in table 2.

<table>
<thead>
<tr>
<th>Table-1: Age and Sex Distribution of the Study Subjects</th>
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<tbody>
<tr>
<td>Gender</td>
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<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Male</td>
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<tr>
<td>Female</td>
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<tr>
<td>Age group (years)</td>
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<tr>
<td>≤15</td>
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<tr>
<td>&gt;15</td>
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</table>

<table>
<thead>
<tr>
<th>Table-2: Prevalence of Hepatitis B surface antigen in the study subjects according to age and sex</th>
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</thead>
<tbody>
<tr>
<td>Status</td>
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<tr>
<td>Positive n (%)</td>
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<tr>
<td>Total study subjects</td>
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<tr>
<td>Age group (years)</td>
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<td>≤10</td>
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<tr>
<td>11-15</td>
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<td>≥15</td>
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<tr>
<td>Sex</td>
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<tr>
<td>Males</td>
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<td>Females</td>
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<td>Year</td>
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<td>2014</td>
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<td>2015</td>
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**DISCUSSION**

Data reporting the seroprevalence of HBsAg among clients visiting a medical laboratory are scarce. The overall prevalence of HBV surface antigen observed in this study was 9.2% among patients visiting a private medical laboratory. This is lower than the pooled prevalence of 14.0% reported in a review by Musa et al covering 2000-2013 [8]. However, this falls within the prevalence rate of 7% to 24% reported among Nigerians [13,14]. A recent national survey reported a prevalence of 12.2% (CI= 10.3-14.5) in the general population and demonstrated a strong age-related aspect in relation to time in seropositivity of HBV [15]. This study demonstrated a rising age-related prevalence from 3.4% among children 10 years and younger to 8.7% in 11-15 years and 9.6% in those 15 years and older. This is in agreement with findings from the Nigerian national survey [15] and a study in China which gave an overall prevalence of 7.7% in the general population with a great variation in the positivity among different age and gender groups. The prevalence was low in children (0.70%-0.77%) but increased progressively from adolescents (1.40% to 2.25%) to adults aged >20 years (5.69% to 11.22%) [16]. Sim et al. reported a prevalence of 0.6% in children under 10 years old, 1.6% among teens and 3.0% in early 20s in Seoul [17] demonstrating a similar rising prevalence.
with age albeit with a relatively low prevalence rate. This underscores the need for government to strengthen the national immunization program [15].

Ikobah et al screened children between the ages of 11 to 19 years in Calabar metropolis for hepatitis B and reported a prevalence of 1.2% [18]. Among a comparable age group of 11 to 15 years in this present study, we found a prevalence of 8.7% much higher than was reported by Ikobah et al. What could possibly account for this significant difference? One reason may be that adolescents who are infected with HBV fall sick more often than their counterparts not burdened by the disease. As such they are more likely to be found around medical facilities with various health complaints. In a malaria endemic region like ours, this is usually assumed to be malaria fever and treated as such. This calls for intensifying screening for HBV serological markers among our sick children. Another reason for the high prevalence rate in this age group may be due to the rural versus urban type of settlements in the 2 studies. The population in our study live in a relatively rural or semi-urban settlement compared to the study population in Calabar. The immunization coverage in Calabar is likely to be a lot better compared with other local governments in Cross River State. Moreover, vaccine stability and potency cannot be overlooked since as the storage facilities available in Calabar are likely to be better than other centres in the state. The 1.2% prevalence reported in Calabar by Ikoba et al. [18] is about the same with 1.6% reported among teens infected with HBV in Seoul [17] another metropolitan area. An even higher prevalence of 13.0% was reported among children 10-19 years in a national survey in Nigeria [15].

The significantly high prevalence rate among children in this study and also as reported in the recent national survey is worrisome. This is because vaccine against HBV infection has been introduced into our National Program for Immunization some 15 years ago [10,11]. This poses a great danger to our children because the risk of chronic HBV infection varies inversely with age; 80-90% of neonatal infections, 30 to 60% of infant and 5% or less of adults [19] are likely to become chronic. Sadoh et al reported prevalence as high as 13.9% among children 1-15 years of age admitted to the Children Emergency (CHER) room of the University of Benin Teaching Hospital (UBTH) [20]. This is more than double the prevalence in this study among the same age group. The overall prevalence in the State of Cross River may account for the high variability.

**CONCLUSION**

This study has demonstrated that the introduction of routine immunization against HBV in 2004 is yet to yield any significant results in this population as there is comparable prevalence between those younger than 15 years and those who are 15 years and older. There is therefore an urgent need for a national policy on catch-up vaccination of young children and adults who were born before the introduction of HBV vaccine into the NPI in 2004. We also recommend that screening for HBsAg among sick people visiting any health facility be undertaken as a routine investigation and vaccination of negative individuals should be carried out as routine.

**REFERENCES**


