ORIGINAL ARTICLE

Seroprevalence of Hepatitis B Surface Antigen among patients attending Aminu Kano Teaching Hospital, Kano

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Abstract

Background: *Hepatitis B virus infection has become a global public health problem. In Nigeria, several studies from different parts of the country have confirmed the endemicity of the infection. This study seeks examine the seroprevalence of Hepatitis B viral infection among patients attending Aminu Kano Teaching Hospital in Kano metropolis.*

Method: *This is a retrospective study in which patients tested for hepatitis B virus using hepatitis B surface antigen (HBsAg) as a marker were reviewed over 3 years. A total of 6,395 patients comprising of 4,040 males and 2,355 females including adults and children were tested for HBsAg from January 2004 to December 2006. Over this period, 1,509 sera were tested in 2004, 2,322 in 2005 and 2,564 in 2006.*

Results: *Among the 6,395 patients, 703(11.4%) comprising of 240 (10.2%) females and 490 (12.1%) males were positive for HBsAg. The highest prevalence was seen at the extremes of life in which 19.4% and 16.9% were seen among patients below 10years and above 50 years respectively. The yearly trend of HBV surface antigenemia was 220 (14.6%) in 2004, 235 (10.1%) in 2005 and 275 (10.7%) in 2006.*

Conclusion: *We conclude that the prevalence of HBsAg among patients attending Aminu Kano Teaching Hospital, Kano is high and highest prevalence is seen at the extremes of life.*

Key Words: *Hepatitis B, Hepatitis B surface antigen (HBsAg), Kano.*

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Introduction

Hepatitis B virus (HBV) infection has become a global public health problem. One in six of the world population is infected with the virus and carrier rate is estimated to be 350 million people[1]. An estimated 150,000 450,000 people are infected yearly during the past two decades in United States of America[2].

HBV is particularly endemic in sub-Saharan Africa which often leads to significant morbidity and mortality and a good number of those infected may be asymptomatic prior to development of complications[3]. In Nigeria, several studies from different parts of the country have confirmed the endemicity of the infection[4-8]. A prevalence rate of above 25% of chronic hepatitis B carrier state have been found in some study populations[5,8]. An increasing trend of HBV antigenemia was previously reported among patients in Aminu Kano Teaching Hospital, Kano in Nigeria[4]. Infants infected perinatally from their HBV positive mother have 90% risk of becoming chronic carriers[9]. Furthermore, about 90% of preschool children infected with HBV failed to achieve clearance and develop persistent HBV infection while majority of adults infected achieved clearance with only 5 10% becoming potential chronic carriers[10].

Safe and effective vaccine against HBV is available and has been recommended for individuals at risk of infection[8]. Nigerian government has introduced routine childhood immunization and mandatory screening of blood for transfusions in order to half the transmission of hepatitis B virus. Although not enforced, vaccination of healthcare workers was also recommended.

This present study seeks to examine the prevalence rate of hepatitis B virus infection among patients attending Aminu Kano Teaching Hospital over a three year period starting from January 2004 to December 2006.

Patients and Method

This is a retrospective study in which results of hepatitis B screening tests done in the Medical Microbiology laboratories of Aminu Kano Teaching Hospital (AKTH) between January 2004 and December 2006 were

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reviewed. Included in this study were all patients sent for the first time for Hepatitis B tests from various hospital clinics of the teaching hospital. Patients who have been previously confirmed Hepatitis B virus infected were excluded from the study. Blood donors were normally not screened in the Microbiology laboratories and so were not included in the review. In the Medical Microbiology laboratories, testing was done initially using latex agglutination technique and positive samples were repeated using ELISA technique (Pathogyne Omega Diagnostics, UK) for confirmation. Standard positive and negative controls from manufacturers were used in testing each batch of samples. The study was conducted when the 1st author was the head of the Medical Microbiology department, AKTH Kano. Since this is a retrospective study, consent to review the data was obtained only from the current Head of Department of Medical Microbiology of the Teaching Hospital.

The results were analyzed using SPSS 11.0 statistical software; Chi-square (X^2) was used to compare association between proportions and P-values <0.05 was considered significant at 95.0% confidence level.

Results

A total of 6,395 patients tested from 2004 to 2006 for hepatitis B virus using HBsAg as marker were reviewed. Among these, 4,040 were males while 2,355 were females.

Figure I showed the gender distribution of hepatitis B virus surface antigenemia among hospital patients. Out of the total 6,395 patients tested, 730 (11.4%) were positive. Among these, 490 (12.1%) males and 240 (10.2%) females were positive giving a male to female ratio of 1.2:1.

Figure II showed the yearly trend of hepatitis B virus surface antigenemia among hospital patients. In 2004, 1,509 sera were tested and 220 were positive; in 2005, 2,322 sera were tested and 235 sera were positive while in 2006, 2,564 were tested and 275 were positive. The yearly prevalence was 14.6%, 10.1% and 10.7% for 2004, 2005 and 2006 respectively.

Table 1 showed age group distribution of patients with hepatitis B virus surface antigenemia. Most patients were seen in age bracket 21-30 years (2,060), the rates of positive antigenamia were 18.2%, 11.2%, 11.6% for age groups <10 yrs, 11-20yrs and 21 30 years respectively. While 10.8%, 9.8% and 16.2% were recorded for aged group 31 40 years, 41 50 years and > 50 years respectively.

Fig 1: Gender distribution of Seroprevalence of Hepatitis B virus surface antigen among patients attending Aminu Kano Teaching Hospital, Kano.

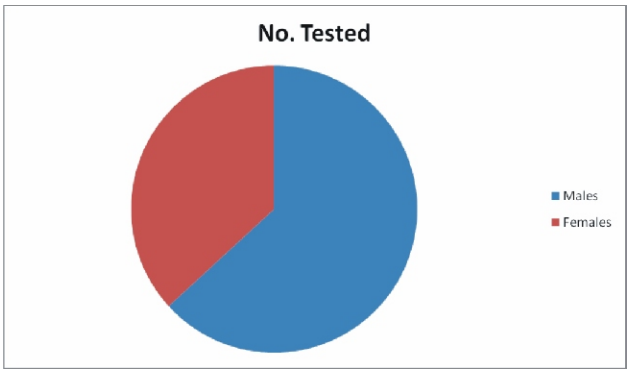

Fig 2: Yearly seroprevalence of Hepatitis B virus surface antigen among patients attending Aminu Kano Teaching Hospital, Kano

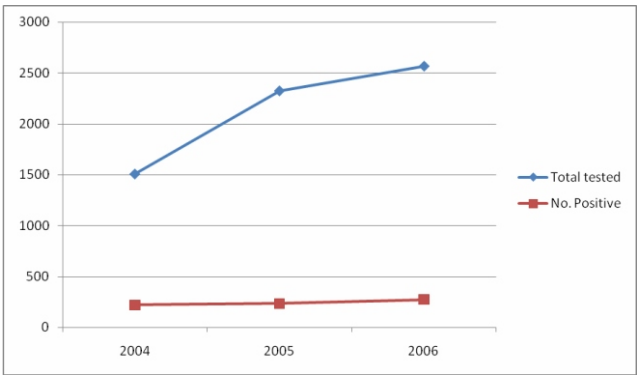

Table I: Age distribution of hepatitis B virus Seroprevalence among patients attending Aminu Kano Teaching Hospital, Kano.

Age in years	No. Tested	No. Positive	Percentage
<10	154	28	18.2
11-20	859	96	11.2
21-30	2060	239	11.6
31-40	1846	199	10.8
41-50	1118	110	9.8
>50	358	58	16.2
Total	**6395**	**730**	**11.4**

Discussion

High endemicity of HBV was defined as HBsAg prevalence of more than 7% in a given population. The observed yearly prevalence of 14.6%, 10.1% and 10.7% for 2004, 2005 and 2006 respectively clearly indicate that HBV infection is highly endemic in Kano. This finding is similar to those reported from Benin[10], Ibadan[11] and Jos[5,12]. Our finding showed a higher prevalence than those reported from Nnewi[13] and Nsukka[14]. The latter reports were from apparently

healthy subjects and may explain the marked reduction in the prevalence rates observed.

A slightly higher HBsAg seroprevalence recorded in the males (male to female ratio of 1.2: 1) in this study is similar to other findings in which the frequency of HBsAg carrier state occurs more in males than females[6, 15, 16]. The similarity in the mode of exposure to HBV across the genders in the study population may account for the prevalence observed.

The age prevalence distribution of which prevalence rates of 19.4% and 16.9% reported in patients of age groups zero to 10years and more than 50 years of age respectively in this study is similar to findings from Nnewi[13] and Benin[10] where higher rates were recorded in age groups less than 10 years and more than 50 years. A high prevalence rate at age less than 10years may suggest vertical mode of transmission which is similar to findings in Asia where vertical transmission is the main mode of infection[17]. Since a declining trend in the rate of HBV in the US has been partly related to immunization strategies employed[2], there is an urgent need to intensify vaccination of all healthy mothers to limit further spread of the virus. On the other hand, high prevalence observed in adults over 50years of age imply horizontal mode of transmission. Sexual contact with infected individuals, transfusion with infected blood, scarification, herbal marks, tattooing and formites are important in horizontal transmission of HBV.

Recent report has it that silent epidemic of HBV in India in which 'Occult hepatitis' defined by lack of serological markers but the presence of HBV DNA detectable only by polymerase chain reaction (PCR) may be responsible for transfusion related transmission of hepatitis from screened blood[17]. Therefore, there is need to make PCR functional in our laboratories and provide reagents for testing for other serological markers of HBV in order to increase diagnostic efficiency of the virus.

We conclude that the decline in the trend of HBV through the 3 years among the study population is not continuous despite measures introduced to half the spread of the virus.

We therefore recommend an urgently need to make PCR functionally available for the diagnosis of HBV. Other reagents for serological detection of HBV should also the routinely available in Kano in order to conclusively diagnose the virus. Finally, uniform childhood immunization as well as vaccination of those at risk in work places should continue to be enforced.

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