PREVALENCE OF HEPATITIS B VIRUS INFECTION AMONGST PATURIENTS IN THE UNIVERSITY OF ILORIN TEACHING HOSPITAL

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ABSTRACT

Background: Hepatitis B virus (HBV) infection is endemic in Nigeria and indeed the whole of Sub-Saharan Africa. The Society of Gastroenterology and Hepatology in Nigeria (SOGHIN) recommends HBV screening for all Nigerians to pave way for early detection and treatment of the infection in those who are infected and prevention of infection in individuals who are free of the infection via immunization. Identifying seropositive paturients and taking steps to deter vertical transmission are important preventive strategies. This study, therefore, sought to determine the seroprevalence rate of HBV infection among paturients seen at a tertiary hospital in Ilorin.

Patients and Methods: This was a prospective observational study of pregnant women seen between September 1 to December 31, 2012 at the Ante-natal clinic of the Department of Obstetrics and Gynaecology, University of Ilorin Teaching Hospital (UITH), Ilorin. Demographic information, relevant medical information and blood samples for screening were taken from all booked and unbooked pregnant women after obtaining informed consent. The serologic test done was a qualitative one using immunochromatographic test strips to screen for the presence of Hepatitis B surface antigen (HBsAg) in the sera of the study subjects.

Results: A total number of 237 pregnant women were enrolled into this study during the study period (mean age 31.2 ± 3.4 years). Thirty (12.7%) of the study subjects had positive test results to the presence of HBsAg in their sera. Hence, the HBV seroprevalence rate in this study was 12.7%.

Conclusion and recommendations: This study has shown a high HBV seroprevalence rate of 12.7% among pregnant women seen at UITH. It is our recommendation, therefore, that HBV screening be included among the routine antenatal investigations for all pregnant women in UITH and the community at large.

Keywords: Hepatitis B virus, Paturients, Seroprevalence, Vertical transmission, Immunization

INTRODUCTION

Infection with the Hepatitis B virus (HBV) is a major public health problem worldwide. In the year 2000, the World Health Organization (WHO) estimated that there were about 400 million carriers of the infection and that approximately one million people died from HBV infection and its sequelae such as acute hepatitis, chronic hepatitis, liver cirrhosis and hepatocellular carcinoma (HCC).[1-3] HBV infection can be classified according to its prevalence as low (< 2%), moderate (2-7%) and high (>7%).[4] Nigeria has a high prevalence of the infection with an estimated 7.3%-24% of the populace having serologic evidence of current infection. The period of pregnancy provides a window of opportunity for reversing the current trend in the prevalence of HBV infection especially in sub-Saharan Africa through screening of all pregnant women for the presence of HbsAg in their sera and institution of appropriate measures to prevent vertical transmission among the HBsAg seropositive ones. One of such preventive measures is the timely administration of HBV vaccine (active and passive) to the newborns of the seropositive mothers as recommended for the reduction of the burden of HBV infection and its sequelae.[5-7]Screening for the presence of HBsAg in the serum is a cost effective and widely available method of detecting HBV infection yet not all health centres in the country have made HBsAg screening for pregnant women a standard clinical practice.

The objective of this study, therefore, was to determine the prevalence of HBV infection among paturients in University of Ilorin Teaching Hospital (UITH), Ilorin using the seroprevalence of HBsAg as a screening tool. It is believed that the outcome of the study may or may not lay credence to the current practice of not including HBsAg screening among the routine investigations for pregnant women receiving care in UITH, Ilorin, Nigeria.

MATERIALS AND METHODS

Study Area and Participants

This was a cross-sectional study carried out between the 1st of September to the 31st of December, 2012 at the Antenatal clinic of the Department of Obstetrics and Gynaecology, UITH, Ilorin. Ethical approval was sought and obtained from the Ethics and Research Committee of UITH, Ilorin. All pregnant women who gave an informed consent to participate in the study were recruited over the study period. The exclusion criterion was refusal to participate in the study. A structured questionnaire was administered to each participant to obtain bio-data and to establish the presence of possible risk factors such as blood transfusion, scarifications, etc.

Hepatitis B Surface Antigen Screening

After obtaining informed consent, 4ml of venous blood was obtained from each participant by venepuncture using a 21 G five ml single use needle and syringe into universal specimen bottles with strict observance of aseptic procedures. About 2 ml of the blood was centrifuged at 3,000 rpm for 10 minutes to obtain serum. The remaining 2ml was used for other routine haematological investigations to reduce the number of venepunctures. The test for the presence of HBsAg in the serum was done using the *Clinotech Diagnostic* HBsAg detection kit which is a rapid generation chromatographic immunoassay for the qualitative detection of HBsAg in serum.[8] The kit was used according to the manufactures' instructions.

The test is primarily based on the principle of sandwich immunoassay in which monoclonal and polyclonal antibodies are employed to identify HBsAg. The test strip has a membrane which is percolated with anti-HBsAg antibodies in the test line region of the strip. During testing, the serum reacts with the anti-HBsAg antibodies conjugated particles. The mixture migrates upwards on the membrane chromatographically by capillary action to react with anti-HBsAg antibodies on the membrane and generate a coloured line. The presence of the coloured line in the test region of the strip indicates a positive result whereas its absence indicates a negative result. As a procedural control, a separate coloured line will always appear in the control line region indicating that an adequate volume of test specimen was collected.

Data Analysis

The data generated from the semi-structured questionnaires was analyzed using the SPSS 16 software. Frequency distribution tables of variables were generated. Numerical data were presented as means ± standard deviation (SD) and ranges. Categorical variables were presented as proportions and compared using Chi-square test, with the level of significance set at $p<0.05$.

RESULTS

A total of 237 pregnant women were recruited consecutively over the study period. These consisted of 148 (62.4%) and 89 (37.6%) booked and unbooked pregnant women respectively. The mean age of the participants was 31.2 ± 3.4 years. A total of 30 pregnant women of the 237 studied were whereas 12 (40.0%) had been transfused with blood in the past. (Figure 1).

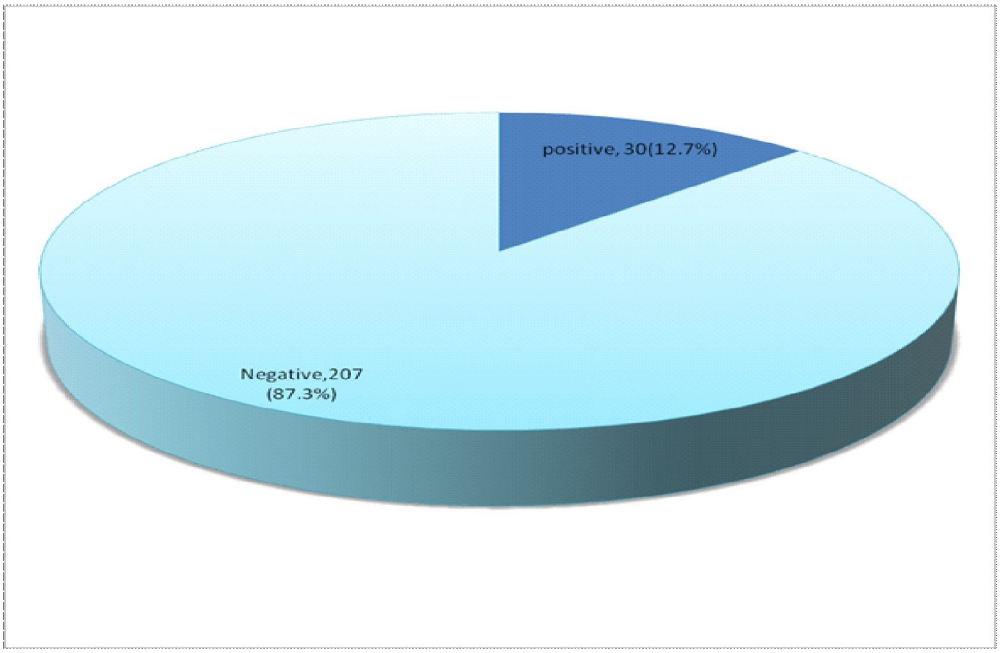


Fig.: 1

HBsAg seropositive giving a prevalence rate of 12.7% which is in the high endemic range.

Of the thirty seropositive pregnant women, nineteen (63.3%) were booked and were regular on antenatal follow-up visits. There was no significant association between HBsAg seropositivity and the risk factors for exposure to HBV infection that were present in the study population. Of the 21 (8.9%) pregnant women who were HIV seropositive, 4 (19.0%) were co-infected with HBV. Among the thirty paturients with HBV infection, 2 (6.7%) had a previous history of genital mutilation whereas 6 (20.0%) had either tattoos or native scarification marks on their bodies. Five (16.7%) gave a history of previous usage of intravenous drugs while on hospital admission

DISCUSSION

Hepatitis B virus infection still has a relatively high incidence and prevalence worldwide. It is considered to be endemic in Nigeria and other countries in sub-Saharan Africa. Majority of infected individuals in the country are often unaware they habour the virus until they present with its late sequelae when the morbidity and mortality is high. The importance of prevention of vertical transmission amongst other preventive strategies, early detection and timely treatment of infected individuals cannot be overemphasized. Prevention of vertical transmission requires screening for HBsAg in pregnant women to identify the newborns that must be immunized.

The HBV prevalence rate of 12.7% obtained among the pregnant women in this study using HBsAg screening is similar to the rates obtained from previous studies in Nigeria. In a similar study carried out among pregnant women nearly two decades ago in Ilorin, the seroprevalence of HBV infection was found to be

16%.[9] The difference in the observed prevalence rate emanating from the same centre may be due to the difference in the period in which the two studies were conducted (nearly 2 decades between the two studies) and the difference in the size of the study population. The decrease in the prevalence rate may indeed be due to the increase in the level of awareness of HBV infection and how it can be prevented over the years. The observed seroprevalence rate of 12.7% is higher than the rate of 11.0% obtained among pregnant women in a Makurdi, North-central Nigeria.[10]In North-eastern Nigeria, the prevalence rates of 11.6% and 8.2% were obtained among 224 and 231 pregnant women in Maiduguri and Yola respectively.[11,12]

In Kano, North-western Nigeria, the prevalence of HBsAg among pregnant women attending an urban maternity hospital was 7.3%.[13]A higher hepatitis B surface antigenaemia rate of 16.5% was recorded among 200 pregnant women attending a tertiary hospital in Osogbo, South-western Nigeria using ELISA (Enzyme-linked immunosorbent assay).[14]In Ile-Ife and Lagos both located in South-western Nigeria, however, lower prevalence rates of 10.2% and 6.1% among 716 and 1,052 pregnant women respectively were obtained.[15,16]In the South-south region of Nigeria, a HBsAg seroprevalence rate 4.3% was recorded among pregnant women studied in Port Harcourt, Rivers State and Benin city in Edo State whereas the rate was 6.6% in Cross-River State.[17-19]

In Owerri, South-East, Nigeria, 31 out of 300 pregnant women tested positive on HBsAg screening giving a seroprevalence rate of 10.3%,[20]whereas in Enugu situated in the same region where 1,499 pregnant women were studied, the seroprevalence rate was 4.6%.[21]

In Sierra Leone, a seroprevalence of 6.2% was obtained in pregnant women by Wurie *et al*[22] and a higher seroprevalence of 9.7% among pregnant women in Cameroon by Frambo *et al*.[23]A prevalence rate of 2.5% was observed among 2664 pregnant Saudi women who were screened for HBsAg,[24] whereas in India where 4,000 pregnant women were studied 37(0.9%) tested positive for HBsAg using commercial enzyme immunoassay.[25]The wide variations in the seroprevalence of HBV infection in pregnant women from the literature may be due to geographical variation, differences in cultural practices, sexual behaviour and practices, and differences in the test methods employed to detect HBV infection. The high seroprevalence rate of 12.7% obtained from this study shows that the prevalence of HBV infection among pregnant women in Ilorin still remains high.

CONCLUSION AND RECOMMENDATION

In UITH, Ilorin, HBsAg screening is yet to be included among the routine antenatal investigations. Taking into consideration the global drive to reduce the prevalence of HBV infection through preventive strategies and our finding of a high prevalence of HBV infection among pregnant women in this study, it is our recommendation that all pregnant women in Ilorin and indeed the whole of Nigeria should be routinely screened for HBV infection.

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DECLARATION

We the authors of this paper hereby declare that it has not been presented nor published and not under consideration for publication elsewhere.

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