ORIGINAL ARTICLE

Hepatitis B virus infection amongst pregnant women in North-Eastern Nigeria- A call for action

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Abstract

Background: It is well known that Hepatitis B virus infection is endemic in Nigeria. Even though studies have been carried out on Hepatitis B virus infection in different parts of Nigeria, and in different sub-groups of individuals, information regarding the prevalence of Hepatitis B virus infection in pregnant women is scanty especially from the North-eastern region of Nigeria. We therefore determined the seroprevalence of Hepatitis B surface antigen (HBsAg) amongst pregnant women in North Eastern Nigeria.

Materials and Methods: A hospital-based cross-sectional study was carried out. The setting was the ante-natal clinic of the Federal Medical Centre, Yola, Nigeria. The duration of the study was from July 2008 to December 2008. Two hundred and thirty-one consecutively recruited pregnant women were screened for Hepatitis B surface antigen. Positive samples were re-tested using ELISA to eliminate false positives. Their biodata were obtained using a questionnaire to establish the presence of possible risk factors such as blood transfusion, surgery, etc. Written informed consent was obtained from each woman.

Results: Out of the 231 pregnant women tested, nineteen of them were seropositive for Hepatitis B virus infection giving an infection rate of 8.2%. Women in the age group 25-29 years had the highest HBV infection rate.

Conclusion: This study confirms a high seroprevalence of Hepatitis B virus infect ion amongst pregnant women. It is recommended that pregnant women should be routinely screened for Hepatitis B virus infection as part of antenatal care services.

Key words: Hepatitis B virus, Nigeria, pregnancy, seroprevalence

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Introduction

Hepatitis B virus (HBV) is a DNA virus causing hepatitis in humans. It accounts for 400 million chronic infections worldwide,[1] and is hyperendemic in sub-Saharan Africa and Asia.[2,3] It is thought to be the main aetiological factor in over 75% of chronic liver diseases.[3] Transmission of HBV results from exposure to infectious blood or body fluids, unprotected sexual contact, blood transfusion, reuse of contaminated needles and syringes, and vertical transmission from mother to child.[4,5] Other high-risk adult populations include persons with multiple heterosexual partners, men who have sex with men and healthcare workers. Without intervention, the risk of peri-natal HBV transmission is greatest for infants born to women who are HBeAg-positive, with infectivity rate of 70% to 90% at 6 months of age, and about 90% of these children remain chronically infected.[6] The risk of peri-natal infection among infants born to HBeAg-negative mothers ranges from 10% to 40%, with 40–70% of these infected infants remaining chronically infected. Children born to HBsAg-positive mothers who do not become infected during the peri-natal period remain at a high risk of infection during early childhood. HBV-related end-stage liver disease or

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hepatocellular carcinoma (HCC) are responsible for over 1 million deaths per year and currently represent 5–10% of cases of liver transplantation.[7-9] HCC is one of the most common cancers worldwide and HBV is responsible for at least 75% of this cancer.

HBV can also be transmitted between family members within households possibly by contact of non-intact skin or mucous membrane with secretions or saliva containing HBV.[4,5]

Testing for HBV infection in pregnancy is important in view of the morbidity and mortality of the host (pregnant women), its effect on the process of parturition, and the risk of vertical transmission from mother-to-child.[10] The contaminated newborn most often remains a chronic carrier with the attendant consequences of liver cirrhosis, and HCC. Mother-to-child transmission can be avoided by vaccination of the newborn.[10] This intervention to stop vertical transmission can only be applied when the status of the pregnant woman is known. Although studies have been carried out on HBV infection in different regions of Nigeria in different sub-groups of individuals like blood donors, information regarding HBV infection in pregnancy in Nigeria is sparse especially from the North-eastern region even though Nigeria falls within a high endemic region as regards the prevalence of HBV infection. We, therefore, investigated the occurrence of HBV infection amongst pregnant women in North-eastern Nigeria.

Table 1: HBsAg Seroprevalence rate among various age groups

Age groups (Years)	Frequency	Percentage	HBV (n)(%)
15–19	10	4.3	1 (0.4)
20–24	49	21.2	4 (1.7)
25–29	92	39.8	5 (2.2)
30–34	51	22.1	3 (1.3)
35–39	24	10.4	4 (1.7)
40–44	5	2.2	2 (0.9)
Total	231	100	19 (8.2)

Table 2: Level of education

Level of education	Frequency	Percentage
None	6	2.6
Quranic	16	6.9
Primary	19	8.2
Secondary	71	30.7
Tertiary	119	51.5
Total	231	100.0

Materials and Methods

The serum samples (about 2.5 ml) of 231 consecutively recruited pregnant women attending the ante-natal clinic were screened for HBV using latex rapid agglutination slide test to detect hepatitis B surface antigen (HBsAg). Reactive samples were further confirmed for HBsAg using enzyme-linked immunosorbent assay (ELISA) (Bio Rad, France).

Their biodata were obtained using a structured questionnaire to establish the presence of possible risk factors such as blood transfusion, surgery, etc. Written informed consent was obtained from each woman.

The study was approved by the Ethics and Research committee of the Federal Medical Centre, Yola, Nigeria.

Analysis

The data obtained were analysed using the statistical package for social sciences (SPSS, version 10.0) statistical software.

Results

At the conclusion of the study, 231 pregnant women were screened. Nineteen of them were seropositive for HBV infection.

Age

The age of the women studied ranged from 17 to 44years with a mean of 27.8 ± 5.2years. There was a steady increase in the age groups of the women, with a peak in the 25–29 year age group and a decline towards the 40–44 year age group. Majority of the women were in the age group 25–29 years (i.e., 39.8%). Women in the age group 25–29years had the highest HBV infection rate Table 1.

Level of education

Majority of the women tested (51.5%) were educated up to the tertiary level, while 2.6% had no form of education. Table 2.

History of blood transfusion and surgery

Majority of the women tested (93.5%) never had blood

Table 3: History of blood transfusion and surgery

Blood transfusion	Frequency	Percentage	Surgery	Frequency	Percentage
No	216	93.5	No	195	84.4
Yes	15	6.5	Yes	36	15.6
Total	231	100.0		231	100.0

transfusion and majority of them (84.4%) also never had surgery Table 3.

Discussion

Sexually transmitted infections (STIs) and HIV/AIDS are widespread in the developing countries and constitute a major public health problem in sub-Saharan Africa.[11,12] The classification of high endemicity for HBV infection has been defined as HBsAg greater than 7% in an adult population.[13] The HBsAg seropositivity of 8.2% among pregnant women in our study shows that the North-eastern region like other parts of Nigeria is endemic for HBV infection. This result is in conformity with an earlier finding that sub-Saharan Africa has HBV carrier rate ranging from 9% to 12%.[14]

From this study, a seroprevalence rate of 8.2% was found for HBV infection in pregnant women in North-eastern Nigeria. This figure is higher than the 2.9% found in pregnant women in Port Harcourt, South-south Nigeria by Obi et al.[15] It is also higher than the 6.2% found in pregnant women in Sierra Leone by Wurie et al.,[16] the 2.5% found by Sahaf et al.[17] in pregnant Iranian women, and the 1.53% found by Todd et al.[18] amongst pregnant Afghan women attending government maternity hospitals in Kabul.

The figure of 8.2% from this study, is however lower than the 11.0% found by Mbaawuaga et al[19] among the pregnant women in Makurdi, North-central Nigeria. It is also lower than the 11.6% found by Harry et al.,[20] and the 12.6% found by Jombo et al.[21] among pregnant women in Maiduguri, North-eastern Nigeria, and a rural community in North-central Nigeria, respectively. Furthermore, it is also lower than the 13.8% found by Roingeard et al.[22] in pregnant Senegalese women in Dakar. Lastly, it is also lower than the 63.3% found by Imade et al.[23] in Jos, North-central Nigeria amongst pregnant Nigerian women. The wide variations in the seroprevalence of HBV 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. Imade et al.[18] determined the seroprevalence of HBV infection by the detection of hepatitis B virus core antigen (HBcAg) in Jos, whereas our study employed the use of HBsAg. Most of the studies cited from the literature did not distinguish between recent and past HBV infection. We did not assay for other serological markers of HBV infection in our study such as anti-HBs and anti-HBc antibodies, which are indicators of previous exposure to HBV infection. If these markers were assayed for, the actual seroprevalence rate would most probably be much higher than the present reported figures. Screening for HBsAg alone does not fully reflect the epidemiology of the disease as it could indicate a carrier state, viral replication, or chronic hepatitis. Therefore, our study did not differentiate carriers of HBsAg from those with active infection. A high frequency of HBV infection was found in the 25–29 years age group followed by the 20–24 and the 30–34 years age groups. This age group of 25–34 years is the most sexually active and fertile. This may explain the high prevalence of HBV infection in them. Majority of the pregnant women tested had tertiary education. This may be because this study was hospital-based in an urban centre. The implication of HBV infection in pregnancy is the risk of vertical transmission from mother-to-child. The contaminated newborn most often remains a chronic carrier with the attendant consequences of liver cirrhosis, and HCC. Mother-to-child transmission can be avoided by vaccination of the newborn. This intervention to stop vertical transmission can only be applied when the status of the pregnant woman is known. There is an urgent need to vaccinate all infants born to mothers who are carriers of HBsAg.

Conclusion

This study confirms a high seroprevalence of HBV infection amongst pregnant women in North-eastern Nigeria. It is recommended that pregnant women should be routinely screened for HBV infection as part of antenatal care services.

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