Seroprevalence of Hepatitis B Surface Antigen among Antenatal Clinic attendees in a Private Specialist Hospital in Onitsha Southeast Nigeria

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SUMMARY

Background and Objective: Hepatitis B virus (HBV) infection is endemic in many regions of the world including Africa, Asia and Western Pacific[1, 2]. In Southeast Nigeria information on the seroprevalence of HBV infection among pregnant women is limited. This study was carried out to determine the seroprevalence of HBsAg among pregnant women attending antenatal care at an Onitsha specialist (private) hospital Anambra state, Southeast Nigeria.

Method: HBsAg was tested for in consenting women who attended antenatal care at Grace Specialist hospital Nkpor, Onitsha. The study women were recruited longitudinally from the hours of 8.00am to 12noon on each antenatal care day which held twice a week.

Results: The seropositivity of HbsAg in the pregnant women was 2.2%. There was no significant association between the HBsAg screening result and age or parity.

***Conclusion*:** The seroprevalence of HBsAg in the pregnant women was 2.2% irrespective of their age, parity, or sociodemographic or biological factors. There is intermediate endemicity of HBsAg among pregnant women in Onitsha Southeast Nigeria.

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INTRODUCTION

Hepatitis B virus infection is one of the global public health problems. It is however an endemic disease in Asia and Sub Saharan Africa[1, 2]. Hepatitis B Virus is a partially double – stranded circular DNA virus and a member of Hepadnaviridae family. The prevalence of HBsAg positivity in various populations varies from close to 0% to rates in excess of 20%[3]. It is estimated that there are more than 300 million HBV carriers worldwide [4]. Hepatitis B infection is endemic in Nigeria with an estimated 12% of the total Nigerian population being chronic carriers[3, 5]. It is transmitted sexually, through blood products and through vertical transmission from an infected mother. About 80% of the infants infected perinatally become carriers[6]. Unlike in developed countries where infection occur predominantly in adults, in resource – poor settings high numbers of infants and children are infected of whom approximately 90% of infants are infected at birth[3]. The consequences of HBV infection are enormous; between one quarter and one – third of people infected chronically with HBV are expected to develop progressive liver disease and annually it causes over a million deaths[7]. The predominant route of transmission varies according to the endemicity of the HBV infection[1, 2]. In developed countries pregnant women are routinely screened for HBV infection. Routine universal vaccination of all persons has also been established in several countries of high and intermediate endemicity[8, 9]. There is neither a screening policy in our environment nor routine vaccination or measures to protect the at risk population. This study was carried out to determine the prevalence of Hepatitis B surface antigen among pregnant women attending antenatal care in a private specialist hospital in Onitsha Southeast Nigeria.

This cross sectional prospective study was done among women who attended booking antenatal clinic at Grace Specialist hospital Nkpor Onitsha Southeast Nigeria. Grace Specialist hospital is a private hospital which renders both primary and tertiary health services. All the women who were on antenatal visit received group counselling on Hepatitis B and the study by the researchers. Those who gave their verbal consent were longitudinally recruited and had their blood collected for HBsAg test. Longitudinal recruitment took place on each antenatal day which held twice a week between the hours of 8am and 12noon. About 2 mls of venous blood was collected from each woman. HBsAg screening was done by the hospital laboratory scientists using one step HBsAg rapid Serum/Plasma test kit manufactured by GUANGZHOU WONDFO BIOTECH CO LTD China. The serum was separated from the blood as soon as practicable to avoid haemolysis. Testing was usually done immediately after separation but when it was not possible the specimen is stored in the refrigerator. The stored frozen specimen was thawed completely and properly mixed before testing. Positive results were indicated by the presence of two distinct red lines on the test strip while in the negative result one line appears on the test strip. For each patient data on the age and parity were also collected using a request form. Their previous knowledge about HBV and vaccination against HBV was also assessed. The women who withheld their consent or who had been previously vaccinated were excluded from this study. The request forms

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were marked with 4 digit figures to maintain confidentiality. All the participating women indicated interest to have their results and these were given to them. The women who were seropositive to HBsAg had arrangements made to have their children vaccinated while those who were seronegative were counselled on the need to undergo vaccination. The data on their age, parity and result of HBsAg screening were analyzed using EPI – Info version 3.3.2 for windows. Statistical comparison was also done using Chi – square (X^2) test. The level of significance was accepted when the p – value is less than 0.05. The results are presented in tables.

Out of a total number of two thousand nine hundred and ninety six women who attended antenatal clinic during the period of study which lasted from 4/4/07 to 14/05/08, 1353 (45.2%) of the women took part in this study. The age range of the study women was 15 – 41 years with a mean age of 28.3±4.5 years. The median and modal age was 28 years respectively. Eleven (0.8%) of the women were within the age bracket 15 – 19 years, 271(20.3%) were of age bracket 20 – 24, 543 (40.1%) were within 25 – 29 years, 417 (30.8%) within 30 – 34 years and 100 (7.4%) within 35 – 39 years. Majority of the women 492 (36.4%) were primipara. Three hundred and fifty eight (26.4%) were para1, 205 (15.5%) para2, 83 (6.1%) were para 3. Of the 1353 women who were recruited into this study 30 tested positive to HBsAg while 1320 were seronegative. This gave an HBsAg seroprevalence of 2.2%. None of the women were either aware of their HBsAg nor were vaccinated against HBV before the study. The age range and parity distribution of the HBsAg screening result were as shown in tables 1 and 2. HBsAg seropositivity did not occur in women below 24 years but occurred most in the 25 – 34 years age range. It also occurred most in women of low parity. There was however no significant association between the age and HBsAg screening test result ($X^2 = 10.59$; df = 5; pp = 0.06) and between parity and HBsAg screening test result ($X^2 = 7.39$; df = 6; p = 0.286)

This HBsAg seroprevalence survey in Onitsha Southeast Nigeria among pregnant women attending antenatal clinic showed a prevalence rate of 2.2%. This rate is higher than 0.34% reported from Karachi[10], and 1.6% among pregnant women in Saudi Arabia[11]. It is however lower than 9.3% reported from Kenya[12], 5.6% in Sudan[13], 4.6% in Enugu Nigeria[14], and 4% in Tunisia[15]. This seropositivity rate is significantly lower than 44.7% reported among school children in rural Northeastern Nigeria[6]. This seroprevalence rate suggests intermediate endemicity (2 – 7%)[3]. The differences could be as a function of the differences in the predominant route of transmission, predominance of risk factors and the socio-biological factors of the study groups. It may also be affected by the vaccination rate and coverage in these populations since none of the in our study had previously been vaccinated. The finding that none of the women were aware of their HBsAg status is similar to the findings in Sudanese and in Tunisian studies where 96.8% - 100% of the women were not aware of their status[13, 15]. This exposes their children to vertical transmission and their close contacts to horizontal transmission. Vertical transmission from mother to child is a major mode of transmission in endemic areas and the overall risk of perinatal transmission in all HBsAg positive mothers is estimated to be about 40%[16].

The fact that there was no significant association between age distribution and HBsAg ($X^2 = 10.59$; df = 5; p = 0.06) contrasts with the finding in other studies where as the age increased the prevalence of seropositive HbsAg significantly increased[6, 11]. The women who are forty years and above were shown to be five times (5x) more likely to be positive for HBsAg compared to young women aged below 30 years[11]. There was also no significant association between the parity distribution and HBsAg screening result. This lack of association suggests that both factors would perform poorly in the prediction of women to be screened for hepatitis. The result also would have been affected by the few numbers of women who get pregnant at such an advanced age. The clinical feature of HBV infection also is mainly asymptomatic. Considering the modes of transmission therefore, the baby, sexual contacts and health care providers are at risk of contracting Hepatitis B infection. In resource – poor settings, where universal precautions are rarely practiced due to inadequate facilities, adequate precautionary measures against contamination are not usually instituted while conducting deliveries. The status of the pregnant women is not known antenatally because of lack of routine screening of pregnant women. With the recent the emphasis and concentration on HIV/AIDS, the fact that Hepatitis B is a communicable disease with as much devastating effect as HIV/AIDS seem to be forgotten. It has been estimate that over one million people die annually from liver diseases relating to HBV infection[6]. The result of this study suggests that Onitsha is an area of intermediate endemicity and therefore there is an urgent need to institute public health policies and measures to reduce the transmission of HBV infection. These measures should include routine universal antenatal screening of pregnant women, universal or selective immunization of new born or at risk infants. These measures have been shown to be effective in other places[8]. An integrated approach involving all stakeholders on heath should be adopted. The recent inclusion of HBV immunization into the expande program on immunization (EPI) programme should be sustained and promoted adequately.

Table 1: the age distribution and HBsAg screening test result

Age range (years)	HbsAg Screening result		Total
	Negative	Positive	(percentage)
15 – 19	11	0	11 (0.8)
20 – 24	271	0	271 (20.0)
25 – 29	531	12	543 (40.1)
30 – 34	402	15	417 (30.8)
35 – 39	97	3	100 (7.4)
40 – 44	11	0	11 (0.8)
Total	1323	30	1353 (100.0)

X^2= 10.59, df = 5; p = 0.06

Table 2: the parity distribution and HBsAg screening test result

Parity	HbsAg screening result		Total
	Negative	Positive	(percentage)
Nullipara (P0)	476	16	492 (36.4)
Primipara (P1)	350	8	358 (24.4)
Multipara (P2-4)	466	6	472 (34.9)
Grandmultipara (≥5)	31	0	31 (2.3)
Total	1323	30	1353 (100.0)

$X^2 = 5.08$; df = 3; p = 0.165

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