Continental J. Microbiology 3: 6 - 10, 2009. ISSN: 2141 – 4106

http://www.wiloludjournal.com

DETERMINATION OF ANTIBODIES TO HEPATITIS B VIRUS IN PREGNANT WOMEN IN AKURE, ONDO STATE, NIGERIA.

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ABSTRACT
The seroprevalence of hepatitis B virus (HBsAg) antibodies in pregnant women were determined using the rapid kit with double sandwich antibody procedure. Eight hundred and sixty pregnant women were recruited for this study. Out of this number forty (4.7%) were positive while eight hundred and twenty (95.3%) were negative, indicating an overall prevalence of 4.7%. It therefore implies that the area under study showed low endemicity for the infection. It was also observed that health status of the women and their history of travels outside Akure, Ondo State was not associated with HBsAg seropositivity. The significance of these findings is discussed.

KEYWORDS: Hepatitis B virus, antibodies, seroprevalence, pregnant women

INTRODUCTION

Hepatitis B. Virus (HBV) infection has been reported as the most common cause of serious liver infection in the world (Uneke, 2005; Pineau and Tiollais, 2009). The infection has consequently been referred to as a public health problem worldwide (Vazquez Martinez, 2003).

The infection can be acute or chronic, but while adults that acquire acute infection usually recover (Awole and Gebre-Selassie, 2005; Buster *et a*l., 2008) or can be managed by supportive therapy, the chronic type is ultimately fatal. Estimate has it that worldwide more than two billion people have been infected by HBV and about 350 million people had the chronic infection (Drosten *et al.*, 2004; Buster *et al*., 2008). WHO (1996) reported that approximately one million people died yearly because of the association between HBV infection and the development of chronic clinical conditions such as chronic active hepatitis cirrhosis and hepatic carcinoma. The prevalence of HBV infection is relatively higher in the tropics (Finlayson *et al.*, 1998; Hannachi *et a*l., 2009) and Africa region has been reported highly endemic for the infection, giving it the second greater number of chronically HBV infected individuals (Kiire, 1996; Hannachi *et a*l., 2009).

Nigeria, a tropical country, has been documented as highly endemic for HBV infection and about 75% of its population is likely to have been exposed to the virus at one time or the other in their lives (Sirisena *et al.*, 2002;). Transplacental transmission of the virus was suggested since HBV antibodies were detected in cord blood of some mothers who had just been delivered of their babies (Hannachi *et a*l., 2009). This present work is aimed at determining the prevalence rate of HBV in pregnant women with a view of suggesting the possibility of maternally transferred HBV or its antibodies during either child delivery or breast feeding.

METHODOLOGY

Study Area

This study was conducted in Akure South Local Government Area (LGA) of Ondo state. This is one of the largest LGA's in Ondo State. The study population was a mixture of people from different parts of the country but largely comprised the indigenes. The main occupation of the people is civil servant, trading and other forms of business. In general the population has high socio-economic and sanitation levels.

Study Design

In order to obtain a representative sample, the most utilized health facility (State Specialist Hospital, Akure), was used for the study. Following approval from the management of the hospital to carry out the

study, the aim of the study was explained to randomly selected apparently healthy pregnant women attending antenatal clinic, after which 860 pregnant women gave verbal consents. Well structured questionnaire was used to obtain subjects attributes considered as risk factors for HBV infections. Blood samples were subsequently taken from these pregnant women.

Serological Test

Five ml of blood sample was aseptically collected by venepuncture from each subject into appropriate labeled anticoagulant free blood sample bottles. The blood samples were left to clot, after which sera were separated from the clotted blood by centrifugation. The sera samples were stored at $+4^0$C until screened. Antibodies to HBsAg was determined using rapid kit with double sandwich antibody procedure (Clinotech ™ Diagnostics and Pharmaceuticals Inc. Canada). The test was carried out according to manufacturers' protocol. The test device was removed from the pouch. The test strip was dipped into fresh serum specimen for one minute with the arrow pointing down; taking care to ensure the marker line on the strip was not immersed in the serum. The strip was then laid flat on clean, non-absorbent test bench with each strip placed beside each labeled sample tube for identification. The test results were read by observing the line bands on the test strips after one minute. Interpretation of results was done according to manufacturer's instruction.

RESULTS

The total number of pregnant women enrolled in the study was 860 with median and mode age of 25-29 years. Fifty three percent (53%) of the pregnant women were young adults (20-29 years). Only 1% of the subjects were illiterate. The rest 99% had at least primary school Education. The highest educational level observed for the women was Higher National Diploma. The results of the pregnant women are shown in (Table 1). Eight hundred and twenty (95.3%) women tested negative for antibodies to HBV while only forty (4.7%) women tested positive. Twenty four of the positive cases were from the 22-26 age range while the remaining sixteen were from the 27-31 age range.

DISCUSSION

This study showed that the prevalence of hepatitis B virus (HBV) infection in apparently healthy pregnant women attending antenatal clinic (ANC) in state specialist hospital, Akure, Ondo State, was 4.7%. This indicated that five in about a thousand pregnant women studied was seropositive for HBaAg. In addition since Hodges *et al.,* (1998) reported that HBV seroprevalence greater than 7% in adult population in a given location classified such location as highly endemic for HBV infection. HBsAg seroprevalence of 4.7% in adult pregnant women screened in Akure, classifies it low endemic for the infection. The HBsAg seroprevalence of 4.7% reported in this study is lower than 12% reported among pregnant women (n= 100) attending antenatal (ANC) in Central Hospital, Warri, Delta State (Ophori *et al*., 2004). It is also lower than the reported HBsAg seropositivity of 9.3% (n = 1, 120) in attendees of ANC (16 – 50 year) Awka, Anambra State, Nigeria (Ezegbudo *et al*, 2004).

Analysis of data considered as risk factors for HBV infection in the studied subjects revealed that only age, occupation and occupation of their husbands appeared associated with the infection.

There was highly significant association (P = 40%) between age of the pregnant women and occurrence of HBV infection. This might be due to the reason offered by Mehment *et al*.,(2005) that exposure to HBV increased with age in urban and rural areas. Occupation of the pregnant women also showed significantly high association (P = 22.2 %) with HBV infection. The HBsAg seropositivity was highest for the pregnant women who were business women. A striking observation made in this study was the zero HBsAg seropositivity for the subjects who were Farmers. This finding was corroborated by the fact that non of the pregnant women having farmers as husbands tested seropositive for the HBsAg. The reason for this observation was not immediately apparent. A further study targeting men and women that are farmers may reveal the possible reasons. It was also observed that there was high significant association (P = 40%) between occupation of the subjects husbands and HBsAg seropositivity, with husbands who were Driver and Engineer having HBaAg seroprevalence of 13% and 11.7 % respectively, though one of the pregnant

Table 1. Data of pregnant women recruited for HBV antibodies screening.

Data	**Number tested**	**Number positive**	**Percentage**
Age range			
17 -21	43	0	0.0
22 - 26	258	24	9.3
27 - 31	318	16	5.0
32 - 36	163	0	0.0
37 - 41	69	0	0.0
42 - 47	9	0	0.0
Educational status			
Illiterate	9	0	0.0
Primary School	25	0	0.0
High School or more	826	40	4.8
Subject Occupation			
Business	77	13	16.9
Hair Dresser	60	9	15.0
Trading	241	9	3.7
Teaching	86	0	0.0
Civil Servant	95	9	9.5
Tailor	69	0	0.0
Applicants	43	0	0.0
Youth copper	9	0	0.0
Caterer	17	0	0.0
Farming	9	0	0.0
Lawyer	17	0	0.0
Health worker	9	0	0.0
Students	129	0	0.0
Husband Occupation			
Business	146	0	0.0
Civil Servant	201	24	11.9
Furniture	60	0	0.0
Lawyer	17	0	0.0
Health worker	9	0	0.0
Driver	69	9	13.0
Engineer	60	7	11.7
Tailor	34	0	0.0
Clergy	34	0	0.0
Teaching	170	0	0.0
Policemen	17	0	0.0
Farming	17	0	0.0
Barbing	9	0	0.0
Student	17	0	0.0
History of Blood Transfusion			
Yes	9	0	0.0
No	851	40	4.7
History of travel outside Ondo State	**Number tested**	**Number positive**	**Percentage**
Yes	845	35	4.1
o	15	5	33.3
History of STD			
Yes	0	0	0.0
No	860	40	4.7

STD = Sexually Transmitted Disease

women was a health worker. Pregnant women who were positive for HBV stand the risk of transmitting the virus to their unborn child during delivery or during breast feeding of the baby after delivery. The introduction of HBV vaccine as one of the routine vaccines for pregnant women will help checkmate the transmission cycle of HBV and subsequently preventing mother to child transmission.

REFERENCES

Awole, M. and Gebre-selassie S. (2005): Seroprevalence of HBsAg and its risk factors among pregnant women in Jimma, Southwest Ethiopia. *Ethiopia Journal of Health Development* 19 (1):45-50.

Buster E. H, Van Erpecum K. J, Schalm S. W, Zaaijer H. L and Brouwer J.T (2008): Treatment of chronic hepatitis B virus infection – Dutch National Guidelines. *Neth. J. Med. 66* (7) : 292-306.

Drosten, C. Nippraselik, T. Manegold C. Melsel, H. Brixnern V, Roth, W. K. Apedjinou. A. and Gunther. S (2004): Prevalence of hepatitis B Virus DNA in Anti- HBS- positive / HbsAg – negative sera correlates with HCV but not HIV serostatus. *Journal of Chinese Virology,* 29: 59 – 68.

Ezegbudo, C.N.Agbonlahor, D.E, Nwosu, G.O. IgweC.U., Agba, M.I., okpala, H.O. and Ikaraoha, C.I. (2004): The seroprevalence of hepatitis B surface antigen and human immunodeficiency virus among pregnant women in Anambra state , Nigeria, *Shiraz E- medical Journal* 5 (2): 15-19.

Finlayson M.D.C., Hayes, P.C., Simpson K. J (1998): Disease of the liver and billary system: hepatitis in Davidson's principles and practice of medicine (C. Haslett, E.R Chilevers, J.A.A. hunter edition). Churchill Livingstone, London. 706 -715.

Hannachi N., Hidas S., Harrabi I. and Mhalla S (2009): Seroprevalence and risk factors of HBV among pregnant women in central Tunisia. *Pathol. Biol. 42*: 115-120.

Hodges, M., Sanders E., and atikens, C (1998): Seroprevalence of hepatitis markers, HAV, HBV, HCV, and HBV amongst primary schools children in Freetown Sierra Leone. *West African Journal of Medicine 17*: 3- 7.

Kiire, C.F (1996): The epidemiology and prophylaxis of hepatitis B in sub – sahara African; a view from tropical & subtropical Africa. Gut 38 (suppl. 2): 505 – 512.

Mehment, D., Meliksah, E. Serif, Y., Gunay S., Tunneer, O., and Zeynep, S. (2005): Prevalence of hepatitis B infection in the southern region of Turkey: Comparison of risk factors for HBV infection in rural and urban areas. *Japan Journal of infectious Diseases*. 58: 15-19.

Ophori, E.A., Wagbasoma, A. and Atanunu, O. (2004): Seroprevalence of hepatitis B virus HBV among pregnant women in central hospital, warri, Delta State, Nigeria. *Journal of Microbiol* 18 (1-2): 217 221.

Pineau P and Tiollais P (2009) : Hepatitis B vaccination : A major player in the control of primary liver cancer. *Pathol. Biol. 42* : 89-97.

Sirisena, N.D, Njoku, M.O., Idoko, J.A., Isamade, E, Barau C, Jelpe D, Zamani, A and Olowo S. (2002): Carriage rate of hepatitis B surface antigen (HBaAg) in an urban community in Jos, Plateau State, Nigeria. *Nigerian Postgraduate Medicine Journal*, (9): 7-10.

Uneke, C.J., Ogbu, O., Inyama, P.U, Anyawu, G.L., Njoku, M.O., Idoko, J.H. (2005): Prevalence of hepatitis B surface antigen among blood donors and human immunodeficiency virus infected patients in Jos, Nigeria, *Memorial Institute Oswaldo Cruze, Rio dejaneiro*, 100 (1): 13-16.

Vazquez-Martinez, J.L, Coreno-Jaurez, M.O., Montano-Estrada, L.E., Attlan, M., Gomez- Dantas., H.

(2003): Seroprevalence of hepatitis B in pregnant women in Mexico. *Salud publica de Mexico* 45 (3): 27 33.

World Health Organization (1996): Hepatitis B vaccine; Making global progress. Epid. Update 31, *Ginebra*.

Received for Publication: 15/09/2009
Accepted for Publication: 12/12/2009

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