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Full Length Research Paper

Sero-Prevalence of HBs Ag and HCV Antigenaemia Among Pregnant Women in Owo, South-West, Nigeria.

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The study is aimed at determining the prevalence of HBsAg and HCV antigenaemia among pregnant women in Owo, Ondo State, Nigeria. One hundred (100) blood donors volunteered attendees of the General Hospital, Owo, Ondo State, South Western Nigeria were recruited for this study. Samples of blood were collected, stored and processed using standard laboratory procedures. Additional information was obtained using a structured questionnaire specially designed for this purpose. All Subjects were screened for HBsAg and HCV using a rapid chromatographic immunoassay method. The results showed that the age of subjects ranged from 15 to 40 years (mean age = 21. 4 years). A total of 4(3.0%) subjects were positive for HBsAg and 1.0% for HCV – anti body. From this study, the prevalence of hepatitis B virus (HBV) and hepatitis C virus(HCV) infection among the sample population is 4.0% . The present study also shows that the hepatitis virus was more prevalent among subjects within the age range of 15 – 40 years. The Study has revealed the presence of HBsAg in Sexually active group (Ages 15 to 40 years of age) among pregnant women in Owo, South West Nigeria, thus supporting the role of sexual transmission of the virus. The 3.0% infection rate of HbsAg can be considered as moderate thus emphasizing the importance of routine screening of blood for these viruses in order to prevent prenatal transmission.

Keywords: Blood, HBsAg, HCV, Nigeria

INTRODUCTION

Hepatitis is an inflammation of the liver characterized by the presence of inflammatory cells in the tissue of the organ. It may occur with limited or no symptoms, but often leads to jaundice, anorexia (poor appetite) and malaise. Hepatitis is acute when it lasts less than six months and chronic when it persist longer (Ryder, 2001). A group of viruses known as the hepatitis viruses cause most cases of hepatitis worldwide, but it can also be due to toxins (notably alcohol, certain medications and plants), other infections and autoimmune diseases (Ahmedin *et al.,*2004).

The hepatitis virus is found in the blood and other body fluids and is transmitted from person to person, the most common routes of infection includes blood transfusions and blood products where there is no screening for blood-borne viruses, medical or dental interventions in countries where equipment is not adequately sterilized mother to infant during childbirth, sexual transmission (in the case of hepatitis B), sharing equipment for injecting drugs, sharing

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straws, notes etc. for snorting cocaine (cocaine is particularly alkaline and corrosive), sharing razors, toothbrushes or other household articles, tattooing and body piercing if done using unsterile equipment(Ahmedin *et al.,*2004).

Hepatitis B is one of the most infectious diseases in the world and a major public health problem (Ujah, 2015). It is the most common form of chronic hepatitis around the world. Chronic carrier can continue to transmit the disease for many years before becoming symptomatic (Ganem, 2001). Infection occurs very often in early childhood. Hepatitis B Virus (HBV) infection leads to increase risk for chronic hepatitis insufficiency, cirrhoses, and hepato-cellular carcinoma (HCC). Hepatitis B diseases is caused by HBV, an enveloped virus containing a partially double stranded, circular DNA genome and classified within the family Hepadnaviridae (Gamen, 2001).

Hepatitis C virus is the second most common type of virus (after hepatitis B virus) that infects the liver (Hossam *et al*., 2015). Hepatitis C virus (HCV) was first identified in 1989 (Choo *et al*., 1989; Houghton 1996). Infection with the virus is a major cause of chronic hepatitis, cirrhosis, and hepato-cellular carcinoma (HCC) around the world (Maheshwari *et al.,* 2008). Approximately 75% of patients are chronically infected and may not be aware of their infection, because they are not clinically ill. These individuals serve as a source of transmission to others and are at risk for chronic liver disease. Hepatitis C virus (HCV) is a small, enveloped; positive – sense, single – stranded RNA virus. HCV is now known to be the major cause of parenterally transmitted non – A, non-B hepatitis. The aim of the present study is to determine the sero-prevalence of hepatitis B and C surface antigen and associated factors among pregnant women attending antenatal care clinics in Owo metropolis, Ondo State.

MATERIALS AND METHODS

Study design

This study is a hospital based survey conducted for six months (March 2015 to August 2015). On every antenatal day, the pregnant women were given health talk on HIV/AIDS and hepatitis infections. They were advised on the need to know their status.

Study Population

A total of One hundred (100) pregnant women were enrolled into the study. The pregnant women were of different gestational ages attending routine antenatal clinic at the General hospital, Owo, Ondo State.

Informed consent

Informed consent was sought and obtained from the pregnant women before they are enlisted into the study. During the data collection process only unique identity numbers were used. Confidentiality was the first concern during data management and all information collected were treated as strictly confidential and used for the study only.

Inclusion and Exclusion Criteria

All pregnant women who gave informed consent were included in the study. Subjects who had once been vaccinated with the required three doses of the vaccine and those who declined to offer consent were excluded from the study.

Demographic characteristics

A well designed structured questionnaire was used to conduct an interview. Socio-demographic data such as age, history of blood transfusion and jaundice, marital status, occupation and educational level of the pregnant women were obtained.

Sample collection

Blood samples were collected from the pregnant women by vernipuncture. About 5ml of blood were collected into EDTA bottles and kept in cold boxes and transported immediately to the Microbiology Laboratory, Achievers University, Owo, Ondo State. The samples were evaluated for the presence and qualitative detection of HBV and HCV surface antigens using a rapid lateral chromatographic immunoassay kit (WHOBC- Acon Biotech, Hangzhou, China) and a rapid visual immunoassay kit (WHOBC - Labman, Hamburg, Germany). Assays were done at room temperature. The pouch was opened under room temperature because the test strips need to equilibrate with room temperature prior to testing. The serum was also brought out of the refrigerator for it to also equilibrate with room temperature before testing. With the arrows pointing downwards, it was immersed into the serum for 10-15 seconds. The maximum line (MAX) on the strip was observed in order to avoid exceeding the line. The strip was then placed on a non-absorbent surface. The timer was then set for fifteen minutes, awaiting the red line to appear or not. Two distinct red lines, one on the control region (C) while the other on the test (T) region. The intensity of the red color on the test line varies depending on the concentration of the HBsAg and HCV in the specimen. Therefore, any shade of red in the test (T) region was considered positive. A One red line on the

Table 1: Socio-demographic characteristics of the subjects recruited into the study.

Variable	Frequency (%)
Age (Yrs)	
≤40	97 (97.0)
≥ 40	3 (3.0)
Marital status	
Single	3(3.0)
Married	97(97.0)
Occupational Status	
Self employed	87(87.0)
Civil Servants	2(2.0)
Private employee	6(6.0)
Unemployed	5(5.0)
Educational status	
Informal	9(9.0)
Primary education	37(37.0)
Secondary education	41 (41.0)
Tertiary education	13(13.0)

Table 2: Prevalence of HBV and HCV among the blood samples examined

Hepatitis B		Hepatitis C		
Positive	Negative	Positive	Negative	Total examined
4(4.0)	96(96.0)	1(1.0)	99(9.0)	100

control (C) region and no shade of red color on the test (T) region, means it is negative.

Data Analysis

Data generated were analyzed using SPSS version 17.0 and chi square (X^2) test was used to measure the relationships between the variables. Significance was determined at $P < 0.05$ i.e (95% Confidence interval).

RESULTS

In the present study, a total of one hundred (100) pregnant women volunteered to participate in this study and were recruited. They were categorized into those who are ≤ 40years and those ≥ 41 years old. Most (97.0%) of the respondents were aged ≤ 40years. Similarly, 97.0% of the respondents are married, while 3.0% are single. The occupational status of the subjects showed that 87.0% are self- employed, 2.0% are civil servants, and 6.0% are unemployed. Majority (91.0%) of the respondents had formal education, while 9.0% were illiterate (Table I).

Hepatitis B virus (HBV) was found to be the most prevalent (4.0%) , followed by hepatitis C Virus (HCV) with a prevalence of 1.0% (Table II). The prevalence of hepatitis amongst the pregnant women examined in relation to age shows that highest prevalence (33.3%) for hepatitis B and C was observed amongst the pregnant women aged 10 – 20 years, followed by 31 – 40 years (9.5%) and 21 – 30 (1.4%). The statistical analysis shows that there is a significant difference ($P<0.05$) between the age of the subjects and the distribution of hepatitis virus. (Table III).

The relationship between health conditions of the pregnant women and the prevalence of hepatitis B and C shows that 2(2.6%) of the subjects that experienced severe bleeding during pregnancy were positive to the hepatitis B virus, and 1(5.3%) of the pregnant who were diabetic were also positive to hepatitis B virus. The statistical analysis shows that there is a significant difference ($P<0.05$) between the health conditions of the pregnant women and the prevalence of HBV (Table IV).

Table 3: Prevalence of HBV and HCV in relation to age of the subjects (n = 100)

Age(yrs)	Hepatitis B		Total	Hepatitis C		Total
	Positive	Negative		Positive	Negative	
10 – 20	1(33.3)	2(66.7)	3	1(33.3)	2(66.7)	3
21 – 30	1(1.4)	72(98.6)	73	0(0.0)	73(100.0)	73
31 – 40	2(9.5)	19(90.5)	21	0(0.0)	21(100.0)	21
41 – 50	0(0.0)	3(100.0)	3	0(0.0)	3(100.0)	3
Total	4(4.0)	96(96.0)	100	1(1.0)	99(99.00	100

Table 4: Relationship between health conditions of the respondents and hepatitis virus.

Health condition	Positive (%)	Negative (%)	Total (%)
Severe bleeding	2(2.6)	76(97.4)	78
Heart attack	1(33.3)	2(66.7)	3
Diabetes	1(5.3)	18(94.7)	19
Total	4(4.0)	96(96.0)	100

Table 5: Prevalence of HBV in relation to associated risk factors

Risk factors	Positive	Negative	Total
Scarification	0 (0.0)	13(100.0)	13
Ear piercing	1(1.4)	73(98.6)	74
Tattooing	1(25.0)	3(75.0)	4
Others	4(4.0)	96(96.0)	100
P <0.03			

The relationship between hepatitis B and associated risk factors such as scarification of the skin, tattooing etc shows that majority (25.0%) of the subjects who had body tattoo were positive to the hepatitis virus, while 1.4% of the positive subjects also had multiple pierce of their ear and 2(22.0%) of those who had none of the associated risk factors stated were also positive to HBV and HBC. The statistical analysis shows that there is a significant difference (P<0.05) between hepatitis virus and associated risk factors (Table V).

DISCUSSION

In this study, one hundred consenting pregnant women were recruited and examined for presence of markers of Hepatitis B virus (HBV) and hepatitis C virus (HCV) infection. From this study, the age range of blood donors was between 15 to 40 years with a mean of 21.4 years. Over the period under stud, the sero-prevalence rate of these viral infection is 3.0% for HBsAg and 1.0% for HCV - antibody. The overall prevalence is 4.0%, this is contrary to previous result reported in different parts of Nigeria (Kagu *et al.,* 2005; Muktar *et al.,* 2005; Ejele *et al.,* 2007; Egah *et al* ., 2007; Lawal *et al.,* 2009; Fasola *et al.,* 2009, Alao *et al.,* 2009).

From this study, the prevalence of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection among sample population is 4.0%. This value is lower than 7.6% prevalent rate reported in Nnewi, Nigeria (Chukwuka *et al.,* 2004). This prevalence is also in contrast with values reported in Ibadan (21.3%) by Otegbayo *et al.,* 2007).

The prevalence rate reported is in consonance with the result of a study conducted by Obi *et al.,* 2006 in Awka, Anambra state, reported a prevalence rate of 4.6% amongst pregnant women. The prevalence of present study is also higher than the 2.4% reported by Olokoba *et al.,* 2009 in Yola; 1.57% found by Ejele *et al.,* and Ojule, 2004 in Port Harcourt; 1.2% was reported by Ejele *et al.,* 2005 in North- eastern, Nigeria; and 0.0% sero-prevalence

rate was reported by Sule *et al.,* 2007 in another study in Ayigba, Kogi state.

The present study also shows that the hepatitis virus was more prevalent among subject within the age range of 10 – 40 years. This is synonymous with the report of study concluded by Ezegbudo *et al.,* 2004, reported a high prevalence among patients aged 15 – 29 years. The implication of high prevalence of asymptomatic HBV and HBC infection among these adolescents is that they may become chronic carriers of the virus, thus acting as reservoir for subsequent transmission. Also the age of acquiring infection is a major determinant of the incidence and prevalence rates (Ezegbudo *et al.,* 2004).

This is justified by reports from earlier researchers that among sexually transmitted and blood borne infections, high risk individuals have a higher probability of getting infected with HBV due to its low infections dose (Uneke *et al.,* 2005: Chang, 2007) and this age group encompasses individuals at the age of greatest sexual activities, thus supporting the roles of sexual transmission of the virus. The limitation of my study is that I did not investigate a similar population of non- pregnant women to compare the findings.

In conclusion, HBV and HCV are less prevalent among pregnant women in Owo metropolis compare with the rest of the country. However, this low prevalence justifies the establishment of a national program for regular screening of all pregnant women in Ondo State. The role of vaccination in overcoming hepatitis B cannot be over-emphasized. A notable example is a study in China that found reduced prevalence of HBsAg to be strongly associated with vaccination among all age groups (Liang *et al.,* 2009). It is recommend that the Nigerian government HBV vaccination programme should be ex tended to the adult population and not just limited to the national childhood immunization programme.

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