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Incidence of Hepatitis B Virus Infection among Women Attending Antenatal Care in General Hospital Aliero, Kebbi State, Nigeria

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ABSTRACT

Background: Hepatitis B is one of the most common infectious diseases that is easily transmitted among the population.
Objectives: This study was conducted to determine the incidence of Hepatitis B viral infection among women attending antenatal care, in general hospital Aliero.
Methods: Blood samples were collected from 110 subjects and investigated using a diagnostic strip (HBsAg strip) designed for the determination of Hepatitis B Surface Antigen in human blood samples (serum).
Results: Out of 110 samples investigated eight (7.3%) were found to be positive for hepatitis B infection. Based on age, the highest incidence of hepatitis B infection was observed among the age group 15-24 (4.55%) followed by 25-34 (1.82%) and lastly 35-44 (0.91%).
Conclusions: The infection rate was found to be related to the low level of education, awareness and the poor standard of living observed among the subjects. It is therefore recommended that sensitization lectures in the study area should be geared towards creating awareness, mode of transmission, immunization and other ways of controlling hepatitis B viral infection.

Keywords: Hepatitis, incidence, infection, immunization, transmission

INTRODUCTION

Hepatitis means liver inflammation; it is a contagious disease of the liver usually caused by many agents including viruses, toxic agents or drugs. Infection caused by the hepatitis B virus (HBV) is life-threatening causing about 2 billion infections in the world (Tong *et al*., 2005). There are six main hepatitis viruses, referred to as type A, B, C, D, E and G. These six types are of greatest concern because of the high rate of morbidity and mortality they cause and the potential for outbreaks spread. Hepatitis B is a serious disease which constitutes a global public health problem (Obi *et al*., 2006). Acute infection may be asymptomatic or may include clinical symptoms such as jaundice, black vomitus, dark urine, severe fatigue, abdominal pain and nausea (Barker, 2006). Routes of infection include vertical transmission (from infected mother to her baby through the placenta and during delivery) and horizontal transmission (after birth) which can be at early life or adolescent period (Custer *et al*., 2004). The primary way of transmission determines the prevalence of chronic Hepatitis B infection in a given region. For instance, in low prevalence rate areas such as the USA and Western Europe, injection, overuse of drugs and unprotected sex with multiple partners are the primary ways, although there are other ways which are also deemed important (Redd *et al*., 2007).

The discovery of HBV leads to the introduction of the first-ever noble vaccine not prepared by tissue culture technique but initially directly from blood plasma and which soon became the first vaccine produced by genetic engineering (Alter, 2004). Hepatitis B virus infection has resulted in several health challenges in part of Asia and Africa and it is endemic in China (Williams, 2006). According to the recent findings by the world health organization, more than two billion people are infected with the hepatitis B virus globally (Chang, 2007). Many research has been carried out on incidence and prevalence of Hepatitis B infection around the globe with varying HBV positive status depending on population or

sub-population studied and adopted methods used.

The incidence and prevalence rate of HBsAg among women attending ANC varies from one region to another. The incidence and prevalence of chronic HBV infection were estimated to be 3.5% among women of reproductive age worldwide (Ott *et al*., 2012). In African countries, the rate of HBV infection ranges within 6–25% (Ott *et al*., 2012). In Nigeria national survey of hepatitis B prevalence among the general population was conducted and the infection rate of 12.2% was reported (Olayinka *et al*., 2016).

Despite Nigeria being categorized among developing countries where hepatitis B infection is highly endemic (Shepard *et al*., 2017), there is still negligence in proper blood screening for women attending ANC and lack of proper awareness campaigns on HBV infection in most of our primary and secondary health care centers. This research aimed at determining the incidence rate of hepatitis B infection among women attending antenatal care (ANC) in the General Hospital, Aliero LGA.

MATERIALS AND METHODS

Study Area

Aliero is a Local Government Area in Kebbi State, Nigeria. Its headquarters are in the town of Aliero, with a total landmass of 350Km^2 and an estimated population of 65,973 at the 2006 census (NPC, 2006). It is bounded in the North-East by Gwandu Local Government Area, in the south by Jega Local Government, in the East by Tambuwal Local Government Area of Sokoto State, in the North-West by Birnin Kebbi Local Government Area. Farming is the predominant occupation of Aliero people.

Study Population

One hundred and ten (110) blood samples were collected from the subjects (women receiving antenatal care) in General hospital, Aliero. The study covered the age groups between 15 and 44 years.

Study Design/ Sample and Data Collection

A cross-sectional study was carried out among pregnant women receiving antenatal care at general hospital Aliero LGA between April and May 2018. Two milliliters (2ml) of blood was collected using venipuncture from each pregnant woman that gave consent. The blood samples collected were dispensed into sample bottles containing EDTA. The samples were spin and separated, the sera obtained were stored frozen for the subsequent analysis. The questionnaire was also administered to obtain information on socio-demographic characteristics, level of education, hygiene standard, history of vaccination and blood transfusion.

Sample processing

In vitro diagnostic strip, (one step Hepatitis B surface antigen test strip designed for the qualitative determination of HBsAg in human serum) was used to determine the status of the subjects to HBV. The procedure was carried out following the manufacturer's instructions. Positive samples show a double red-colored band, one at the test (T) and the other at the control (C) region while negative samples show a single red-colored band only at the control (C) region.

Inclusion criteria

Pregnant women who gave consent to participate in this study.

Exclusion criteria

Pregnant women that chose not to participate in the exercise and those who were immunized against hepatitis B infection (confirmed verbally).

Statistical analysis

The data obtained from the study were analyzed using "IBM SPSS SOFTWARE VERSION 20" to determine percentage positive frequency.

RESULTS

Percentage positive of subjects screened for Hepatitis B Virus

The distribution cases of HBsAg among pregnant women in General hospital Aliero, Kebbi state shows that out of the 110 blood samples tested, eight 8 (7.3%) subjects were found to be positive, and 102 (92.7%) were negative. Out of 8 positive subjects, 5 (62.5%) were from age range 15-24, 2(25.0%) from 25-34 and 1 (12.5%) from age group 35-44. Table 1.

Incidence of Hepatitis B virus according to age group

The distribution cases of Hepatitis B among

pregnant women in General Hospital Aliero, Kebbi state. Out of 110 pregnant women who participated in the study (n=110), eight (8) were found to be positive and the incidence distribution based on the number of subjects examined per age group were, 15-24 (4.55%) with the highest incidence, followed by 25-34(1.82%) and 35-44 (0.91%) as shown in Table 2.

DISCUSSION

Hepatitis B virus infection remains a threat to public health worldwide, especially in developing countries. Immune suppression during pregnancy is of clinical and epidemiological importance with regards to HBV infection (Oluboyo *et al.,* 2014). The result of our study revealed that the incidence rate of HBV infection among the subjects attending ANC in General Hospital Aliero, Kebbi state is >7%. The result, therefore, corroborates with an earlier report by Juszozyk, (2000) and is also in agreement with an incidence rate of 6–25% in the WHO African region. The distribution of HBV infection by age indicate that the age group 15-24 years recorded the highest rate of infection (4.55%), this result agrees with earlier findings by Adabara *et al*. (2012) that the higher rate of HBV infection was recorded among the age group 20-29 years with 10.3%, this could be attributed to the fact that age group (15-24 years) are sexually active and may have been involved in unprotected sex with multiple partners. Studies have revealed that the common route of HBV transmission is through blood transfusion and unprotected sex (El -Deeb *et al.,* 2008). Several studies reported that poor hygiene practice and lack of awareness about HBV infection have also contributed significantly to the high rate of infection among the population (Kurbanov *et al*., 2010). The incidence is however lower than a similar study carried out in Bayara hospital, Bauchi State where the infection rate of 17.2% was reported (Ndako *et al*., 2012). Despite both research were conducted at secondary health care centers, the difference could be due to study design, regional and population-specific variations. However, the incidence rate in this study is higher than the rate of 4.3% earlier reported in Portharcout (Akani *et al*., 2005), and 2.19% in Benin City (Onakewhor *et al*., 2001).

Considering the overall incidence, it can be deduced that Aliero local government has an incidence rate of 7.3% which is an average value for the northern region with Maiduguri and Zaria having the higher rate of 11.6% and 8.3% respectively (Harry *et al*., 1994; Luka *et al*., 2008).

Table 1. Percentage positive of subjects screened for Hepatitis B Virus

Age	Positive	Incidence %
15-24	5	62.5
25-34	2	25.0
35-44	1	12.5
Total	8	100

CONCLUSION

In conclusion, the incidence rate of HBV infection among pregnant women attending ANC in general hospital Aliero was 7.3% and the age group 15-24 years had the highest incidence rate of 4.55%, this indicated that HBV infection is endemic in Nigeria especially in the northern region. It is hereby recommended that free hepatitis B screening for women attending antenatal care should be emphasized. Furthermore, awareness campaigns on the effect of hepatitis B virus infection and the importance of immunization to the society are encouraged. Further study to follow up cases of HBsAg positive pregnant women is also significantly important.

Table 2. Distribution of Hepatitis B virus according to age group

Age	Number of Blood Samples Collected	Number of Positive Samples	Incidence (%)
15-24	50	05	4.55
25-34	35	02	1.82
35-44	25	01	0.91
Total	110	08	

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