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RESEARCH ARTICLE

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Prevalence of Hepatitis B surface antigen (HbsAg) among pregnant women attending University Health Services (sick-bay) A.B.U. Zaria

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ABSTRACT

The study was aimed at determining the seroprevalence of Hepatitis B Virus carrier and infectivity status of carrier pregnant women attending University clinic. A total of 210 Blood samples were collected from pregnant women attending antenatal clinic, ABU Health Services and analysed for HBsAg using One step HBsAg diagnostic rapid test strip and the HBV profile determined by the One Step HBV Multi-5 Test kit. The overall positive samples were 9 representing a prevalence of 4.3% for the total sample analysed. In relation to staff status, the prevalence the junior staff was 4.8% with an overall prevalence of 1.4% while senior staff had a prevalence of 4.0% and an overall prevalence of 1.9%. Out of the 9 samples positive of HBsAg was found to be HBeV positive. The prevalence rate of HBsAg based on age group shows that 35-44years age group had the highest prevalence rate of 5.7% followed by 25-34years age group with 5.1% and 15-24years had only 1.8% while 45-54 age group has 0% prevalence. The screening of women should be encouraged at antenatal sessions and treated for HBV infections commenced when detected.

Keywords: Hepatitis b surface antigen, prevalence Pregnant women, HBeV

INTRODUCTION

Hepatitis B virus (HBV) infection is one of the major diseases of mankind and is a serious global Public Health problem with approximately 45% of the global population living in areas of high chronic HBV prevalence.[1] The infection prevalence varies markedly in different geographic areas of the world, as well as in different population subgroups ranging from over 10% in some Asian, Western pacific and sub-Sahara African countries to under 0.5% in the United States and Northern European countries.[2] The prevalence of chronic HBV infection worldwide could be categorized as high (>8%), intermediate (2-7%) and low endemic (<2%).[3] However, in Nigeria, the World Health Organization estimates that about 20 million are presently infected and five million die of the disease.[4]

The main modes of HBV transmission are peri-natal, horizontal, parental and sexual, and the relative rates of these vary throughout the world. Parenteral and sexual transmission predominates in industrialized countries, whereas horizontal and perinatal transmission predominates in developing countries.[5] According to Hyams [6], Nigeria is classified among the group of countries endemic for HBV infection. Many of these people may not be aware of the infection and hence fail to seek appropriate medical attention therefore progressing to chronic liver disease. When a pregnant woman is infected with HBV, there is a chance she may infect her foetus. It has been reported that 10-20% of women seropositive for HBsAg transmit the virus to their neonates but in women who are seropositive for both HBsAg and HBeAg, vertical transmission is approximately 90%.[7] Chronic HBV infection have been defined as

carriage of HBsAg for at least 6months and the highest risk (80-90%) of the chronic infection have been found among infected neonates born to HBeAg positive carrier mothers, followed (30%) by children infected before 6years of age.[6]

The Hepatitis B "e" antigen is a protein secreted into blood stream by viruses that are actively replicating in the liver cells. When a Laboratory investigation finds "e" antigen, it means the virus is actively replicating and the person usually has a large quantity of HBV-DNA in their blood stream. They are usually more infectious to anyone who might come into contact with their blood or body fluids.[7]

People with HBeAg are considered at greater risk of progressing to liver disease than those who have developed HBeAb, because it indicates ongoing viral replication in the liver. Children with chronic hepatitis B often test positive for the "e" antigen because their immune system have not yet noticed the virus, or attempted to stop the virus from replicating from the liver.[8] Although studies have been carried out on HBV in other parts of the country, information is very scarce on seroprevalence of HBV among pregnant women attending University Health Centre. As a result, guidelines and other adequate information to establish a database and also the prevention and control strategies are lacking.[9] The aim of this study is to determine the seroprevalence of Hepatitis B Virus carrier and infectivity status of carrier pregnant women attending University clinic.

MATERIALS AND METHODS

Study Area and Population: The study was conducted among pregnant women attending Ahmadu Bello University Health Center Antenatal clinic (ANC), serving cosmopolitan community. All Pregnant women attending ANC were eligible for the study. Participation was voluntary with consent of the subject. The recruitment was by simple random sampling method from March – May 2011. Two hundred and Ten (210) volunteered pregnant women aged 15 – 50 were involved, with the following categories; Students, Senior staff and junior staff. Ethical approval was also obtained from the Chief Medical Director for the study.

Sample Collection and Processing

A total of 5ml of venous blood was collected from the cubital vein using aseptic technique from each study participants. 1ml of the freshly collected blood was introduced into an EDTA bottle for PCV (Packed cell volume). The remaining 4ml was centrifuged at 1500 revolution per minute (rpm). The serum collected was tested for Hepatitis B surface Antigen (HBsAg), using a rapid one step test for the qualitative detection of HBsAg in serum or plasma. The serum was allowed to equilibrate to room temperature prior to testing. The strip was removed from the sealed pouch and used as soon as possible by immersing into the serum in a container, with arrows pointing toward the serum and left for 20seconds. The test strip was then removed and placed on a non-absorbent flat surface. The result was read after 15minutes.

One Step HBV Multi-5-Test: The reactive (positive) samples were further subjected to another investigation known as Hepatitis B virus profile, to determine the presence of HBeAg among other markers. The Combo cassette displays HBsAg, HBsAb, HBeAg, HBeAb, and HBcAb. Two or more drops of HBsAg were added to each pot and were allowed for 20minutes. The results were read according to the manufacturer's instruction.

RESULTS

A total of 210 pregnant women were screened for the HBsAg, of which 9(4.3%) were found to be positive. Among the 100 Senior staff 4(4.0%) were positive of HBsAg and 48 Students screened 2(4.2%) were HBsAg positive. The prevalence based on social class stratification is shown in Table 1.The prevalence rate of HBsAg based on age group shows that 35-44years age group had the highest prevalence rate of 5.7% followed by 25-34years age group with 5.1% and 15-24years had only 1.8% while 45-54 age group had 0% prevalence (Table 2).

Out of the 9 samples positive of HBsAg, 1(11.1%) was found to be HBeV positive indicating infectivity rate of HBeV antigen (Table 3).

Table 1: Prevalence rate of HBsAg based on social class stratification.

Status	Total no. screened	No. of positive	No. of negative	% Prevalence
Junior staff	62	3	59	4.8%
Senior staff	100	4	96	4.0%
Students	48	2	46	4.2%
Total	210	9	201	4.3%

Table 2: Prevalence rate of HBsAg according to age group.

Age group	Total no. screened	No. positive	No. negative	% Prevalence
15-24	57	1	56	1.8%
25-34	117	6	111	5.1%
35-44	35	2	33	5.7%
45-54	1	0	1	0%
Total	210	9	201	4.3%

Table 3: Prevalence of HBeV among HBsAg positive patient based on status.

Status	No +ve HBsAg	No +ve HBeV
Junior staff	2	0(0%)
Senior staff	4	1(25%)
Students staff	3	0(0%)
Total	9	1(11.1%)

DISCUSSION

HBV infection affecting pregnant women may result in severe disease to the mother and chronic infection to the newborn. In the present study, the overall seroprevalence of HBsAg in pregnant women attending Sick Bay A.B.U. Zaria is 4.3%.The result has thus indicated intermediate endemicity. This is within the range of 2-7% earlier reported [10] The finding was also in agreement with reports from, various cities such as 4.8% from Port-Harcourt; 5.7% from Ilorin; and 4.6% in Enugu respectively [11][12]. The finding agreed with earlier report in other parts of the world such as Jeju Island of Korea (4.9-6.4%), Zambia (6.5%), Sierra Leone (6.2%), U.S.A. only for Asian American (5.6%),Turkey (4.2%) respectively.[13] This findings is slightly higher than the 2.2% prevalence rate found among pregnant women attending Onitsha Clinic in Anambra State regardless of age, status and socio-demographic factor contrary to the findings of this research which showed prevalence rate between the age group of which (35-44yrs) had the highest prevalence rate of (5.7%), socioeconomic status showed Junior Staff having the highest prevalence rate of (4.8%).

However, this study didn't show any significant statistical difference in terms of age, socioeconomic status or Educational level. The level of significance established by this research indicated that age of an individual does not determine the HBV status. The antigenic prevalence of HBV among the patient showed gradual increase from the youngest age group and a gradual decline with increase at the age of 45-54yrs. This could be attributed to oral contraceptive which are steroid hormone prepared in tablet form and have slower but longer action in the body stimulating the immune system for a longer period of time. This observation was also reported by Lavanchy, [3]. It was earlier reported that socio economic status has no statistical correlation with HBV infections, [14][15].

This study demonstrates the endemicity of HBV infection and high infectivity rate of HBeV infections among the patients screened suggest that HBV is likely to be acquired by both vertical and horizontal means of transmission. Also the relationship existed between HBV and HBeV because the result of Chi-square statistics showed that $P<0.05$.This implies that that the status of HBV of an individual affect his status of HBeV. This finding is in agreement with the work done in Makurdi [15].

CONCLUSION

On the basis of the result of this study, it shows the overall prevalence of 4.3% carriers among pregnant women attending ante-natal care in Sick-Bay Zaria. The attendance of ante-natal clinic is therefore of medical importance as that would enable them to be checked and treated for HBV infections when detected. The health enlightenment of the patient by the nurses attending the clinic should be sustained to enable them know how to keep healthy during such physiological changes in their body.

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