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Human immuno-deficiency virus infection and hepatitis b virus co-infection: Prevalence among pregnant women in Jalingo taraba state, Nigeria.

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ABSTRACT

HIV/AIDs and HBV infection continues to be a global health burden. Mother to child transmission (vertical) remains a source for the persistent nature of both viral infections. This necessitated the study on the sero-prevalence of HIV and HBV among pregnant women attending Taraba State specialist hospital for antenatal care. The study was carried out to ascertain the prevalence of HIV, HBV and Co-infection rate among pregnant women attending Taraba State Specialist Hospital for antenatal care. 200 pregnant women within the age range of 21-46years without previous knowledge of a positive status attending Taraba State Specialist Hospital Jalingo for antenatal care were screened for HIV and HBV using rapid chromatographic immunoassays for qualitative detection of HIV antibodies and HBsAg in serum. Of the 200 subjects, 4 (2%) were positive for HIV, 7 (3.5%) for HBsAg and 1(0.5%) gave co-infection. Age based prevalence for HIV was 1(1,4%), 3(3.1%) and 0(0%) for age grade 21-30, 31-40 and 41-50years respectively. HBV age based prevalence gave 3(4.2%) 3(3.1%) and 1(3.1%) for the age grades in an ascending order. Only one subject within the age grade of 31-40years gave a co or dual infection. Vertical transmission of HIV and HBV is preventable and interventions such as compulsory screening of pregnant women for HIV and HBV, chemo-therapy and prophylaxis for positive mothers, birth dose vaccine for children born to HBV positive mother as well as restriction from breast feeding has resulted in the reduction of M-T-C-T rate.

INTRODUCTION

Blood contact infections such as HIV and HBV infections continues to be a global health burden with majority of cases recorded in China, Southeast Asia and Sub-Saharan African. Both viral infections can be transmitted horizontally (contaminated blood and its products, injection drug use and sexual contact) and vertically (mother to child transmission) [1]Global estimates, puts the figure of persons living with HIV/AIDs to be around 42 million with 70% of these persons residing in Sub-Saharan Africa [2].HIV/AIDs is believed to be the leading cause of death among women of reproductive age and also contributes to the death of infants and children [3]. HIV infection in pregnant women is a global problem and W.H.O has estimated that close to 600,000 children are infected yearly by the HIV virus via M-T-C-T with majority of these cases happening in Africa [4]. About 90% of HIV-infected children acquire the infection during pregnancy and childbirth [5]. Incidence rate of M-T-C-T without intervention is 25-45%. (5-10% during pregnancy), 15-20% during delivery and 5-10% during breast feeding) [6].

Hepatitis B Virus infection is a global public health issue [7]. W.H.O estimates that about 2 billion people have been infected with HBV at some point in their life and 350 million people across the world continue to carry chronic HBV infection, of which almost one million die annually from HBV-related liver diseases [8]. Vertical transmission (M-T-C-T) remains a main source of the persistence of HBV, particularly in endemic regions such as China, South East Asia and Sub-Sahara Africa [9] and prenatal transmission has been established to account for 35-50% of chronic HBV carries in China [10]. The development of HBV chronic infection is associated with the age of acquisition. At birth, 80-90% of babies born to HBeAg positive mothers will become chronically infected. This percentage reduces to 30% during perinatal period to 6years of age and decreases further to 12% during endolescence [11].Vertical transmission of both viral infections (HIV and HBV) occurs theoretically via three routes.

These routes are transplacental (in-utero), natal transmission (during delivery) and postnatal (during care or through breast milk) [7][12]. Since both viruses share similar route of M-T-C-T, screening of pregnant women of both viruses, is of immense importance for the safety of the un-born child, mother and health-care workers because a positive pregnant woman is a potential source of danger to the three above mentioned persons.

Several reports on the prevalence rate of HIV and HBV on a singular based for pregnant women are readily available but records for singular and dual or Co-infection rate for the above named viruses among pregnant women is limited. Singular studies on HIV prevalence for pregnant women gave the following prevalence. National prevalence is 4.4% [13], 11% for Abuja [14], 8.9% for Jos plateau State [15], 17% for Benue State [16], 10.2% for Okada in Edo State [17], 4% for Yenagoa in Bayelsa State [18], 5.4% for Abakaliki Ebonyi State [19], 8.6% for Akwa, Anambra State [20] , Lagos gave 3% [16], 3% for Yobe [16], 5% for Kaduna [16], and 4% for Kano [16].HBV infection prevalence among pregnant women in Nigeria includes 12.5% for Benin [21], 18.2% in Zaria [22], 7.3% in Kano [23], 8.3% for Ibadan Oyo State (24) and 3.4% for Enugu state [25]. Limited information on the Subject matter (HIV and HBV Co-infection prevalence on pregnant women), developing a prevalence guide for the study region and the treat a positive mother posses to herself, the unborn child and health workers during delivery, necessitated this prevalence survey on pregnant women attending Taraba State Specialist Hospital Jalingo for antenatal care.

MATERIALS AND METHODS

This was a cross sectional study carried out at the department of laboratory services, medical microbiology unit. All pregnant women attending Taraba State Specialist Hospital for antenatal care from April through June 2017 were eligible for the study. Pregnant women present for their first three consecutive antenatal appointment were selected and enrolled for the study. A total of 200 women within the age range of 21-46years were selected and enrolled for the study. Jalingo is the capital city of Taraba State. It's coordinates are 8^{0}54M and 11^{0}22' E and has an estimated population of 118,000 persons. Veinous blood samples of 3-5mls were collected from each patient after sterilization of venipuncture site with an alcohol swab. The collected blood samples were emptied into red cap containers and sent to the laboratory. Blood samples were allowed to clot after which they were spun and the serum separated into another red cap container. Only non-hemolysed samples were used for the screening processs. All procedures were carried out in accordance to the guidelines described by Olokaba et al. [26] and the safety precautions as provided by CDC [27], NCCLS [28], WHO [29]. HIV antibodies were detected using rapid chromatographic immunoassay determine kits (Alere Medical Co-Ltd). Positive cases were confirmed using Uni-Gold kits (Trinity Biotech, Ireland) and contrasting result between determine and uni-Gold kits were conclusively confirmed using STAT-PAK (chem. Bio Dragnostic system U.SA.). Rapid chromatographic immunoassay strip for HBsAg (ACON laboratory U.S.A) was used to detect antibodies to HBsAg. All kits were used and results read according to manufacturers instruction. All obtained results were recorded and analyzed using descriptive statistic. Statistical association was evaluated using chi-square at a confidence limit of 95% with p-values < 0.05 regarded as been significant.The study was approved by the ethics Committee of Taraba State Specialist Hospital Jalingo. All the participants gave consent to collaborate voluntarily and confidentiality of data recorded was assured and kept.

RESULTS

Of the 200 women enrolled in the study, 71 of them were under the age-grade of 21-30years. Age grade 31-40years had the highest number of subjects (97) while 32 participants within the age-grade of 41-50years accounted for the remainder. figure1. 4 out of the 200 (2%) reacted for HIV antibodies only. 7 out of the 200 (3.5%) were positive for HBsAg while 1 out of the 200 (0.5%) gave dual or Co-infection. Table1. HIV prevalence based on age grade gave 3.1% as it's highest for age grade 31-40years while no positive case was recorded for 41-50years age group. Table 2 HBV gave a prevalence of 4.2% for age grade 21-30 as it's highest while the other age grades had the same prevalence of 3.1%. Table 2. Co-infection was reported for only one case within the age-grade of 31-40years with a prevalence of 1.0%. Table 2. Combined infection prevalence per age-grade gave the following values. 21-30 had 5.6% (4 out of 71), 31-40 had 7.2% (7 out of 97) while age grade 41-50 had 3.1% (1 out of 32) Table 2.

DISCUSSION

The HIV prevalence of 2% obtained in the study is lower than the national prevalence of 4.4% [13]. It was also found to be lower than some other reports in Nigeria [14] [15] [18][19]20], but correlates with 2.8% reported by Ajoge et al for pregnant women at Okene [30]. Noubiap and Co-workers also recorded a similar prevalence of 2.5% for pregnant women in a rural district of the

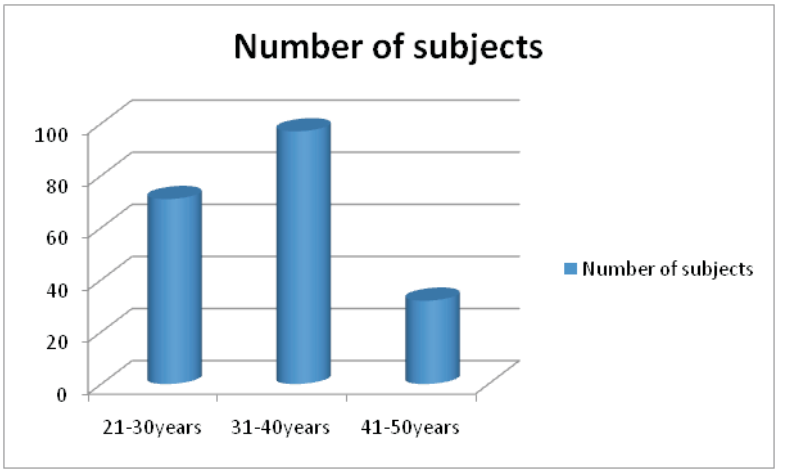

Fig 1 : Age-grade distribution of patients.

Table 1 : Distribution of HIV, HBV and Co-infection rate.

Type of infection	Frequency of occurrence	Percentage of frequency
HIV	4	2
Hbv	7	3.5
Co-infection	1	0.5
Negative	188	94
Total	200	100

Table 2 : HIV, HBV and Co-infection rate prevalence based on age.

Age	Samples size	HIV infection	HBV infection	Dualinfection	Total
21-30	71	1 (1.4%)	3(4.2%)	0(0%)	4(5.6%)
31-40	97	3(3.1%)	3(3.1%)	1(1.0%)	7(7.2%)
41-50	32	0(0%)	1(3.1%)	0(0%)	1(3.1%)

far North region of Cameroon [31]. The variation of HIV prevalence rate observed across Nigerian is usually determined by difference in socio-cultural practices, sexual practice and behavior, awareness of HIV infection testing and preventive measures and previous blood transfusion as well as the uses of body piercing substances.

Age-grade 31-40years gave the highest prevalence of 3.1% while age-grade 41-50 had no account of HIV infection. This report agrees with Buresi et al. Who recorded that age-grade 15-34years had the highest HIV prevalence and that within the age-grade of 40-44years had no infection [18]. Oladeinede and Co-workers gave a contrasting report where pregnant women within the age of 10-20 years accounted for most HIV positive cased [17].The highest age-based prevalence of 3.1% obtained for subjects within 31-40years may be as a result of the increased sexual activites associated with this age group.Prevalence within the age-grade of 12-25years is usually used to measure the rate of new infection [18]. The reduced prevalence for age grade 21-30years (1.4%) obtained by this study when compared to age grade 31-40 (3.1%) infers reduction in the rate of new infection acquisition. Thus, this study infers a decline in infection rate for HIV in Jalingo, Taraba State.

3.5% prevalence was recorded for HBsAg in this study. This value is lower than prevalence reported for some other studies in Nigeria [21][22][23][24] but agrees with Ikeako and Co-workers who reported a prevalence of 3.4% for Enugu South-East Nigeria [25]. Oladeinede et al. reported a lower prevalence of 2.2% among pregnant women receiving antenatal care in a traditional birth home in Benin City [32]. Age grade 21-30years gave the highest HBV prevalence of 4.2%. This report agrees with Adoga et al who reported same age-grade as the most prevalent [33] but disagrees with Tula and Iyola who gave 35years and above as the age-grade with the most incident of HBV infection [34]. The highest prevalence of HBV infection recorded on this age group (21-30) may be attributed to HBV risk factors such as drug abuse, tattooing, active sexual nature e.t.c. associated with this age-grade.

The 0.5% Co-infection rate reported by this study is similar to the 0.74% recorded for Yaounde [34], 0.88% reported for Burkina Faso [36], lower than 1.3% found in Northwest Ethiopia [37] but significantly lower than 1.5% for Northern region of Cameroon [31] and 4.2% for Sourth-east Nigeria [38].The reduced overall prevalence for HBV recorded in this study may be attributed to the methodology or/and sensitivity of the rapid diagnostic kits used.

CONCLUSION

The prevalence recorded in this study (2% for HIV, 3.5% for HbsAg and 0.5% for dual infection) may be lower when compared with reports from other studies but is considerably high. In this age of modern medical intervention, it is absolutely possible to completely eradicate or bring to it's lowest minimum M-T-C-T of both HIV and HBV. Surveys such as this study, aims to create awareness and generate data that will be required for policy formations and intervention development and sustenance to ensure M-T-C-T is prevented. Such policies and interventions should include compulsory screening and counseling of all antenatal women on HIV and HBV, positive cases should be highlighted and placed on antiviral to reduce viral load which seems to have a direct correlation with M-T.C.T possibility, pregnant women positive for HBV should be placed on both antiviral and Hepatitis B Immunoglobulin to reduce transplacental and natal transmission, newborns born to HBV mothers should be given the birth dose vaccine and breastfeeding should be discouraged for children born to HIV and HBV positive mothers. Current strategies in place to combat HIV/AIDs should be replicated for HBV and such strategies sustained and augmented. An HIV and HBV free-world is possible and achievable.

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