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Prevalence of Hepatitis B Surface Antigen (HBsAg) Among HIV Seropositive Patients Attending Federal Medical Centre Bida, Niger State, Nigeria

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ABSTRACTS: The Study was to assess the prevalence of hepatitis B surface antigen among HIV patients attending antiretroviral clinic at federal medical centre Bida. 250 HIV Seropositive patients were screened for HBsAg which comprised of 119 male and 131 female, out of which 13.2%(n=33) were positive for HBsAg. The sex distribution of HBsAg infection shows the prevalence rate of 11.8 %(n=14), while female 14.5 %(n=19). The age between 20-25 have the highest prevalence of 63.3% among the female compared to that of male 36.7%. It is therefore suggested that HBsAg should be included as routine screening for HIV patients.

Keywords: Hepatitis B; Prevalence study; Surface antigen; Human Immunodeficiency Virus (HIV).

Introduction

Due to shared modes of transmission, co-infection with hepatitis B virus (HBV) and HIV is common .with the reduction in AIDS-related death due to highly active antiretroviral therapy (HAART), liver disease has emerged as an important cause of death in patients with HBV-HIV co infection. More than 350 milli0n people are infected with HBV, 75% of the world's HBV carriers residing in Asia (Lee, 1997, Lai, 2003, Burnett, 2005). Forty million people are infected with HIV worldwide. Due to shared mode of transmission co infection is common, and an estimated 4million people worldwide are co infected with HBV-HIV. Hepatitis B virus (HBV) is a double stranded DNA virus in the hepadna viridae family. Hepatitis are characterized by distribution of the normal hepatic lobular architecture due to varying degree of necrosis of individual liver cells or group of liver cells acute or chronic inflammation and Kupffer cells enlargement and proliferation(Water et al,1998). There are about six types A, B, C, D, E, and G (Bauker, 2003). Hepatitis A & E are transmitted through ingestion of contaminated food or water (called faecal oral route) while B, C and G viruses are transmitted mainly by blood or bodily fluids and common mode of transmission (Ojo, 1992).

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The prevalence of HBV among HIV-infected individuals varies with the population studied and the geographical distribution. In the united state up to 10% of all HIV-infected individuals have HBV co infection (Thio, 2003). Several studies in sub-Sahara Africa support and increased prevalence of HBV in infected population. Southeast Asia,sub-sahara Africa ,the amazon basin,middle east,central Asia,and eastern Europe has a high endemicity with (≥8%) and areas with low endemicity(<2%) include North America ,Western and Northern Europe,Australia and part of South America(WHO, 2002).

Hepatitis B Virology

The HBV genome is a circular with 4 overlapping reading frames encoding then envelope,core,polymerase,and X proteins(Lee,1997,Lok,2001). The envelope protein is found in serum as surface antigen. The gene encoding core antigens (HBcAg) also encodes e antigens (HBeAg) using an upstream start site. The HBeAg contains signal peptides that target it to the endoplasmic reticulum for secretion into serum, while HBcAg does not contain signal peptides and is incorporated into the virion. A mutation between the start sites of HBeAg and HBcAg (precore or core promoter region) decreases or abolishes the production of HBeAg without affecting the production of HBcAg. Although the hepatitis B virion itself does not cross the placental barrier HBeAg can cross the placenta and may function as an immune desensitizer to HBV predisposing the fetus to the establishment of chronic HBV infection (Lee.1997, Lok, 2001).

Hepatitis B virus is not directly cytopathetic, the, the spectrum of disease in HBV is determined by the host immune response, where hepatocytes injury leading to acute and chronic hepatitis which is mediated by cytotoxic T-lymphocytes (Funkuda, 1995, Lee, 1997).

Impact of HIV on Hepatitis B

The presence of HIV prior to HBV infection increases the risk of developing chronic hepatitis B virus and prolonged ALT elevation (Hadler, 1991). Hepatitis B-HIV co infection reduces the rate of spontaneous HBeAg and HBsAg seroconversion leading to a higher prevalence of HBeAg –positive (Thio, 2003). There is an association between HIV and reactivation of HBV and elevated HBV DNA levels ,although serum ALT elevation are milder compared with HBV monoinfected individuals(Colin,1999,thio,2003). Despite this liver damage progresses more rapidly, considering the period from HBV acquision to cirrhosis in individuals with HBV-HIV Co infection (Thio, 2003) co infected patient have a poorer response to interferon therapy.

Patients with HBV-HIV Co infection have an increased risk of liver related complications and death in a in a retrospective review,50% of death in a cohort of HIV infected individuals in 1998 through 1999 were due to end stage liver disease compared with < 14% of death in 1999 and 1996(Bica,2001). In a more recent prospective study of HIV infected individuals, liver related disease was the second most common cause of death and than cardiovascular disease (Weber, 2006).

Materials and Methods

Study Area

The study was carried out among people with human's immunodeficiency virus (HIV) attending institute of humans virology Nigeria laboratory at federal medical centre Bida, Niger State.

Collection of Sample

A total of 250 HIV laboratory and clinically confirmed patients were recruited for the study and their blood sample were collected via the antecubital vein and a baseline laboratory testing was conducted base on manufacturer's recommendation using a rapid test strip (Biotech lab). For the detection of HBsAg in serum sample and all asceptic; precausion were followed tenaciously and data generated was analyzed using EPI-INFO for a study power of 95% confidence limit and probability levels of 5% significant.

Results and Discussion

Two hudndred and fifty HIV seropositive patients were diagnosed for HBsAg which shows a prevalence rate of 33 (13.2%) were positive and 217 (86.8%) negative as shown in Table 1. The sex distribution of HBsAg was male 14 (11.8%) positive and 105 (88.2%) negative, while female 19(14.5%) positive and 112(85.3%) negative as shown in Table 2.

Table 1: The prevalence of HBsAg in HIV positive patients

Serological Test	Positive	Negative	Total
HBsAg	33 (13.2%)	217 (86.8%)	250
HIV	250 (100%)	0.0 (0.0%)	250

Table 2: Sex Distribution of HBsAg in HIV positive Patients

Sex	Positive	Negative	Total
Male	14 (11.8%)	105 (88.2%)	119
Female	19 (14.5%)	112 (86.5%)	131
Total	33 (13.2%)	217 (86.8%)	250

Human immunodeficiency virus (HIV) pandemic is an undisputable reality of our time with socio political implication and unrelenting morbidity and mortality are at the increase. Out of the 250 sample collected from HIV Seropositive patients. HBsAg shows a prevalence rate of 33 (13.2%) which is not in agreement with (Taura, et al, 2008) which shows a prevalence rate of 12(6%) among patient attending Aminu Kano Teaching Hospital (AKTH) kano,and also not in agreement with that reported by Labdelkader et al. (2007) in Australia, which shows a prevalence rate of 6.3%,also not in agreement with Forbid et al,2007,in Keffi Nigeria which also shows a prevalence rate of 7.0% and Sirisena et al which shows a prevalence rate of 9.7% respectively. But our study prevalence rate is lower than that reported by (Lipiroth et al, 2007) which shows a prevalence rate of 25.5% and also lower than that reported by Uneka et al, in Jos plateau state. The variation in the prevalence rate of HBsAg among HIV patients confirmed the statement of Tien et al, 2005,and Rockstroth,2003, which said that the infection rate of HBsAg among HIV patients have been variable world wide depending on the geographical region/location and also the types of risk involve.

The sex distribution of HBsAg among HIV patients as shown in Table 2 revealed that 14 (11.8%) of male are positive for HBsAg, while 19 (14.5%) of female are positive for HBsAg. The prevalence rate of female is somehow higher than that of male, this may be due to gender inequality in presentation is consistent with the sex distribution documented in the majority of centres, and also this may be due to the fact that female are more sensitive to changes in their health and may be socially conditioned to seek and receive assistance whereas men may have to proof their masculinity by avoiding the seek role in order to maintain their image.

The age distribution of patients (Table 3) shows that the detection of the infection rate of among HIV positive patients was higher among the age group 41-45years (10.7%), then 31-35years (6.3%) and 26-30years (3.9%) respectively. This suggest that the sexual route could be the common mode of transmission for both HBsAg & HIV as this age group are sexually active and this is in agreement with Savaranan et al, 2007,who state that the maximum level of(58%) of infection for HBsAg occurred between 31-40 years age group.

Table 3: Age distribution of HBsAg and HIV positive patients.

Age bracket	Male	Female	Total
< 20	1 (6.7)	14 (93.3)	15
20 – 26	1 (2.1)	46 (97.9)	47
26 – 30	2 (3.9)	49 (96.1)	51
31 – 35	2 (6.3)	30 (93.8)	32
36 – 40	1 (2.4)	41 (97.6)	42
41 – 45	3 (10.7)	25 (89.3)	28
46 – 50	0 (0.0)	5 (100.0)	10
51 – 55	0 (0.0)	10 (100.0)	5
56 – 60	0 (0.0)	5 (100.0)	5
> 60	0 (0.0)	2 (100.0)	2

Conclusion

Hepatitis B is a serious public health problem world wide and one of the most common infectious diseases globally (Mcquillan et al, 1989), people at high risk of the infection should protect themselves by taking hepatitis B immunization (WHO, 1991). It is common and it last for a life time, the high prevalence of HBsAg may likely reduced/decreased if adequate health care is given.

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