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Tripple Infection of HBsAg and HCV Co-Infection Among HIV Seropositive Patients

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ABSTRACT: Human Immuno deficiency virus(HIV) pandemic is an undisputable reality of our time with socio political implication and unrelenting morbidity and mortality profiles.250 laboratory and clinical confirmed HIV infected patients which comprises of 119 male and 131 females, out of the sample analyzed for HBsAg,HCV,and HBsAg and HCV co infection.13.2%(n=33) were positive for HBsAg and 86.8% (n=217) negative, while 7.6%(n=19)were positive for HCV and 92.4%(n=231) negative for HCV and 4.0%(n=10) were positive for HBsAg and HCV co infection and 96.6%(n=240) negative for HBsAg and HCV co infection. The age and sex distribution of HBsAg HCV co infection shows a prevalence rate of 3.4%(n=4)were positive and 96.4%(n=115)were negative among the male, while the females shows 4.6%(n=6) were positive and 95.4%(n=125) were negative .the age between 20-25 have the highest prevalence of 63.3% among the female compare to that of male 36.7%.yhe CD4+ T-lymphocytes count of BBV and HCV co infection was significant(177.2±134.7) at p=0.2.this is an indications that HBV and HCV decreases CD4+ T –lymphocytes count and could in turn affects the immune system and the management of the patients. It is therefore suggested that HBV and HCV should be included as a routine screening for HIV patients also provide a justification for implementation of the policy for effective management of HIV positive clients. Correspondenc: Dangana Amos: HaematologyDepartment Federal medical

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Introduction

The burden of communicable and non communicable diseases is fast becoming a major source of public health policy makers worldwide. The world health report (2006) indicate the morbidity, mortality are attributed to the three most common chronic viral infections documented worldwide (Mccaron et al 1997, Soriano et al, 2006). Diseases of the hepatobilliary system are a major problem in patients with human immune deficiency virus (HIV) infection. An estimated one third of deaths in HIV infection are directly or indirectly related to liver diseases.

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Liver disease in HIV infected persons can occur due to hepatitis B.virus (HBV) and hepatitis c virus co infection, chronic alcoholism, hepatic tuberculosis due to the effects of antiretroviral therapy (ART), Kumaransamy et al, 2005, Rathi et al, 1997). Since the principal route of HIV transmission are similar to that followed by the hepatotropic viruses, as a consequence infection with HBV and HCV are expected in HIV infected patients and co infection of HCV and HBV with HIV have been associated with reduced survival increased risk of hepatotoxicity associated with antiretroviral therapy.

Worldwide HIV is responsible for 38.6% million infection as estimated at the end of 2005 & 2006. According to Global AAIDS epidemic, while HBV and HCV account for 370million and 130 million chronic infections respectively. Moreover among the HIV infected patient 2-4million is estimated to have chronic HBV infection, while 4-5million is infected with HCV (Alter et al, 2006). The reported co infection rates of HBV/or HCV in patients have been variable world wide depending on the geographical regions, risk group and the type of exposure involved(Rockstroth et al,2003,Dodiq et al 2001,Tien et al,2004). In Europe and USA, HIV- HB co-infection has been seen in 6-14 %(Alter- et al, 2006 and Rockstroh-etal, 2003), while HIV-HCV co-infection has been variably reported ranging from 25% to almost 50% (Tien et al, 2005 and Dadiq et al, 2001), while in Thailand exposure to HBV-HCV is 8.7% and 7.8% of HIV patient (Sungkanuparph et al 2003).

In 2004, joint United Nations program on HIV/ AIDS (UNAIDS) support on global AIDS epidemic show that out of the 52.5million infected world wide in 2004, 34.7million live in Sub-Sahara Africa, and give the high number of HIV cases in Nigeria, the 3rd in the world after South Africa and India (UNAIDS, 2006). The prevalence rate has reached 60% in some African Country, Botswana is 42%, Nigerian5%, and the prevalence in Nigerian show that North-east has 5.8%, South- south has 5.8%, South-east has 4.2%, South- west has 2.3%, North- west has 2.7%, and North- central has the highest 7.0% (UNAIDS, 2004). This research work is aim to assess the T- lymphocyte immuno response of HIV seropositive patient in the presence of HBsAg and HCV co- infection.

Materials and Methods

Study population: These comprised of 250 laboratory and clinically confirmed HIV patients attending antiretroviral clinic at the institute of virology clinic at Federal medical centre Bida area of Niger- state. Their blood sample was collected and a based line laboratory testing was conducted on all patients using 3rd generation Enzyme Linked Immuno Sorbent assay (ELISA) by (premier medical co- operation) for the detection of HBsAg and HCV antibodies (anti HCV) also the CD4 lymphocyte (CD4) count by flow Cytometry method using cyflow machine(partec).

Sample collection

Five millilitre of blood was drawn with minimum stasis into 5ml of E.D.T.A bottle via antecubital vein using a disposable vacutainer syringe and needle and each was mixed gently, thoroughly and steadily to prevent it from lyses and was processed within 2hrs of collection for CD4+ T – lymphocytes count HBsAg and HCB respectively, and the data generated was analyzed by the statistic software Epi –info for windows version 8.0 for a study power of 95% at a study probability level of 5% significant.

Results and Discussion

Out of the 250 sample analyzed for HBsAg, HCV and CD4+ T–lymphocyte count, HBsAg showed a prevalence rate of 33 (13.2%) was positive and 217 (86.8%) negative. 19(7.6%) was HCV positive and 231(92.4%) negative and HBsAg, and HCV co-infection was positive 10 (4.8%) and 240 (96.0%) negative as shown in Table 1 respectively. The sex distribution of HBsAg and HCV co-infection was 4(3.4%) positive and 115(96.6%) negative among male, while 6(4.6%) positive and 125(95.4%) negative for female as shown in Table 2. Consequently Table 3. Shows the mean CD4 + T-lymphocyte count for HBsAg positive 156.5±99.4 and 250±137.7 were negative for HBsAg, while 2068±123.2 were positive for mean CD4 for HCV and 240.3±137.9 were negative and for HBsAg and HCV co- infection 177.2±134.7 was positive and 240.3±136.6 was negative.

Table 1: The prevalence of HBsAg, HCV and co-infection in patients

Serological Test	Positive	Negative	Total
HBsAg	33 (13.2%)	217 (86.8%)	250
HCV	19 (7.6%)	231 (92.4%)	250
HBsAg & HCV Co-infection	10 (4.0%)	240 (96.6%)	250

Table 2: Sex Distribution of patients with HBsAg, HCV and co-infection

Sex	Positive	Negative	Total
Male	4 (3.4%)	115 (96.6%)	119
Female	6 (4.6%)	125 (95.4%)	131
Total	10 (4.0%)	240 (96.0%)	250

Table 3: CD4+ T-lymphocyte count in HBsAg and HCV patients

Serological Test	Mean CD4+		Z Score	P value
	Positive	Negative		
HBsAg	156.5 ± 99.4	250.1 ±137.7	3.8	0.0002
HCV	206.8 ± 123.2	240.3 ±137.9	1.0	0.3
HBsAg + HCV	177.2 ± 134.7	240.3 ±136.6	1.4	0.2

According to the UNAIDS,Report 2004 the North Central Nigeria have the highest prevalence of HIV infection in Nigeria and the co infection HBsAg and /or HCV with HIV complicates the clinical course, management and may be also adversely affect therapy for HIV infection. Out of 250 samples that was analyzed in the study HBV shows a prevalence rate of 33(13.2%) and HCV 19(7.6%) which is not in agreement with the work of Forbid *et al,2007*, which shows the prevalence rate of 11.0% of HBV and 7.0% of HCV in Keffi Nigeria ,and also not in agreement with the work of Sirisena *et al*, which also shows a prevalence rate of 9.7% from urban population in north central Nigeria .our study shows a significantly higher prevalence rate compare to the previous studies, but it is lower than 25% reported by Uneka *et al* who used similar method of HBV detection in JOS located in North Central region, and also not in agreement with savaranan *et al*,2007,which shows a prevalence rate of 9% of HBV and 2.2% of HCV in India. These variation in the prevalence rate of HBV and HCV in HIV patient confirm or agree with the statement of Tien *et al*, 2005 and Rockstroth et al, 2003, which said that "the reported cases of co infection rate of HBV and HCV in HIV patients have been variable world wide depending on the geographic regions risk groups and the type of exposure in involved.

The study also shows the co infection prevalence rate of 4.0% of HBV and HCV is significant and confirmed that HBV and HCV is a major threat to HIV/AIDS patients in Nigeria and indeed the world at large as reported in other part of world by Weber *et al*, 2006 .and it also suggests that it is possible for HIV patient to have HBV and HCV Co infection as shown in figure1.

Table2 analyses revealed that the percentage of female infected with HBV and HCV co infection is some how higher than that of male. This gender inequality in presentation is consistent with the sex distribution documented in the majority of treatment centres particularly in the first decade of antiretroviral therapy, which is in agreement with Bruga *et al*,2007,who said that Women now account for over 50% of people with HIV/AIDS co infection with hepatitis infection in Africa. A potential explanation for this is that women may be more sensitive to changes in their health and may be socially conditioned to seek and receive assistance whereas men may have to prove their masculinity by avoiding the sick role in order to maintain their culturally assigned images as "providers". This however does not necessary imply that in absolute terms more women are infected with HIV in our population, this is in agreement with Ola *et al*,2005 who said that more Men are afflicted with HIV/AIDS.

Table3 shows the mean CD4 T-lymphocyte count in HBV and HCV infection and also HBV and HCV Co infection from this result the mean CD4 T-lymphocyte count of HBV is significant (155+_99.4) at (p=0.0002) which indicated that HBV is likely to affect CD4 count in HIV Patients, this is not in agreement with Josse *et al*, 2000 in Ibadan, who stated that HCV affect or decrease CD4 count. While the CD4 T-lymphocyte count of HCV (2006.8+_123.2) at (p=0.3) is slightly significant and also the mean CD4 T-lymphocyte count of HBV and HCV co infection (177.2+_134.7) at (p=0.2). this indicated that HBV and HCV co infection in HIV patient could likely decrease CD4 T-lymphocyte count and this could inturn affect the immune system and the management of the patient, this is in agreement with Forbid *et al*, 2007 in keffi and Josse *et al*, 2008, who said that there is a significant decrease in the mean CD4count of HBV and HCV.

Conclusion

The detection of HBsAg and HCV in sera of HIV positive client attending ART facility (IHVN Laboratory) at Federal Medical Centre Bida provide a rationale for possible inclusion of routine screening for HBsAg and HCV in HIV positive client and possible have a policy for effective management of HBsAg and HCV in effort to improve HIV management.

We have demonstrated that co infection of HIV and hepatitis viruses (HBV and/or HCV) is on the increase in Nigeria (177.2 ± 134.7) at (p=0.2) and appears to decrease the CD4 count of patient who is co infected especially with triple co infection of HIV HBsAg and HCV. Treatment of either hepatitis viruses is complex because of the pharmacokinetic interaction with the components of HAART regimens. Thus the phenomenon of HIV and hepatitis virus co infection is a cause for concern. The medical community in Nigeria therefore needs to be alert to this phenomenon as timely intervention/treatment option would need to be instituted in such individual if treatment is to be meaningful.

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