

Prevalence and Correlates of TB and HIV Co-infection Among People Living with HIV/AIDs at the DLHM Hospital, Calabar

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Abstract: TB is the most common opportunity infection and cause of death among people living with HIV. With dwindling prevalence figures from several national studies and dwindling funding, CD4 monitoring makes management easy, accessible and affordable. Objectives to determine prevalence and correlates of TB and HIV Co-infection among People Living with HIV/AIDs at the DLHM Hospital, Calabar. The study is retrospective descriptive study of 274 TB-HIV co-infected clients from October, 2009 to June, 2011 was carried out by examining their hospital records. Research instruments were a designed checklist used to collect socio demographic data, information on HIV diagnosis and ARV use, CD4 count and TB-HIV co-infection. Data was analyzed using the excel software. The result shows age group 21-30 years and 31-40 years constitute the largest (39.0% and 31.0%) of co-infected clients respectively. The percentage of infected females was 160/274 = 58.6% and the rest were male. Only 28 (10.2%) had their CD4 count above 350 cells counts/ul. Conclusion: Co-infections of TB and HIV are common. CD4 count is a reliable tool in monitoring progression. Every HIV positive client should be considered having the potential of contracting TB, and this underscores the need for proper screening and monitoring.

Keywords: TB-HIV Co-infection, Prevalence, CD4 Cell Count

1. Introduction

Since the emergence of HIV, tuberculosis (TB) and HIV have been closely linked together. TB is the most common opportunity infection and cause of death among people living with HIV. [1] With a decrease in cell-mediated immunity, HIV changes the pathogenesis of TB, thereby greatly increasing the risk of disease from TB in HIV- co-infected persons and progressing to more serious complications and

forms of TB. In 2006, a total of 1.7 million people died of TB including 231,000 people with HIV. [2] [12] Nigeria have the fourth highest burden of tuberculosis (TB) in the world, with an annual incidence of 311 cases per 100,000 population and a mortality rate of 81 per 100,000 population in 2006. [4] [13] In Nigeria, about 21% of all TB patients are dually infected with TB and HIV. [3] [4]

In 2013 of the estimated 9 million people who developed TB, an estimated 1.1 million (13%) were HIV positive. There

were also 360,000 deaths from HIV associated TB equivalent to 25% of all TB deaths, and around 25% of the estimated 1.5 million deaths from HIV/AIDS in the same year. [5] Factors contributing to the resurgence of tuberculosis in developing countries include co-infection with HIV; emergence of multiple resistant tuberculosis, inadequate treatment, poverty, malnutrition, overcrowding, armed conflict and increasing numbers of displaced persons.

In the course of HIV infection TB also occurs earlier than many other opportunistic infections. Also, in co-infected individuals the risk of death is twice that of HIV infected individuals without TB, even when CD4 cell count and antiretroviral therapy are taken into account. [8]

Many people are not aware of being infected with tubercle bacillus; the infection thus becomes reactivated by other infections such as the HIV when the body immune system is weakened. People living with HIV or immunosuppressed patients due to drugs seem more vulnerable to tuberculosis (TB) than HIV uninfected persons. HIV increases the progression of latent TB infection to active disease [9] and it is the cause of increase in the number of TB cases. [10] Brown [11] also reported highest rates of tuberculosis among infected people with HIV.

The uncertainty of moving from latent to active TB is estimated to be between 12 and 20 times greater in individual living with HIV than among those without HIV infection [7]. This also shows that they may become infectious and transmit TB to someone else, more quickly than would otherwise happen. Overall it is considered that the lifetime uncertainty for HIV negative individual of progressing from latent to active TB is about 5-10%, whereas for HIV positive people this same figure is the annual risk. [8]

Without proper treatment, an estimated 90 percent of persons living with HIV die within months after contracting tuberculosis. [1] The initiation of highly active antiretroviral therapy (HAART) in persons co-infected with tuberculosis can cause an immune reconstitution inflammatory syndrome with a worsening, in some cases severe worsening, of tuberculosis infection and symptoms.

TB is often affected by the presence of other infections such as DM, housing factors, socio economic factors, poverty and malnutrition. These have made the prevalence of TB increased over the years despite the existence of DOTs programmes. TB-HIV co-infection has brought hardship into the existence of several communities and societies through morbidity, mortality, deformities, stigmatization and discrimination and poor health seeking behaviour. So studying co-infections would enhance the prospect of stakeholders achieving successes at disease control and prevention. The blood count of CD4 (cluster of differentiation 4) is a glycoprotein found on the surface of immune cells such as T helper cells, monocytes, macrophages, and dendritic cells is an important indicator of how well the immune system is improving, and it is being used as index of monitoring disease progression.

These epidemiologic relationships between TB and HIV, and the high prevalence of these diseases in sub-Saharan

Africa and indeed Nigeria make studying TB and HIV infected populations in this region of the world important. The malnutrition which is commonly present in patients with tuberculosis can add to the impaired antioxidant capacity in these patients. This study determines prevalence and correlates of TB and HIV Co-infection among People Living with HIV/AIDs at the DLHM Hospital, Calabar

2. Methods

The study area is the DLMIH hospital in Calabar in southwestern Nigeria. The hospital serves as referral centers to the numerous primary health care centers and mini cottage hospitals in the town. The HIV prevalence in Calabar is 7.1%, a little above the Nigerian national prevalence rate put at 5.1%. Between the periods October, 2009 to June, 2011, about 1960 clients were tested for HIV in the hospital out of which 475 were positive and enrolled into care. The hospital is being supported by an NGO, with monitoring and supervisory roles being provided by the FMOH.

This is a retrospective descriptive study of TB-HIV co-infection among HIV positive clients enrolled into care at the DLMIH hospital. Case notes of clients were reviewed to generate valuable research data. Eligible subject include a registered HIV positive client 18 years and above while those who were co-infected with HIV constitutes the direct study population.

All subjects who met the inclusion criteria were recruited into the study and their case notes examined for the relevant data under the cover of privacy and confidentiality. Research instrument consist of a designed checklist for collection of socio demographic data, information on HIV diagnosis and ARV use, CD4 count and TB-HIV co-infection

Approval to carry out this data was obtained from the chief medical director of the hospital and the site coordinator. A study limitation include few cases of missing data, thus subjects with complete data were eventually analyzed. Data was entered into the SPSS software version 17.0 after data cleaning and random checks. Frequency tables and charts were generated to showcase pattern of TB and HIV co-infections and some selected variables.

3. Results

Two hundred and seventy four patients co-infected with TB/HIV was recorded during this period from October, 2009 to June, 2011, this figure include 114 males (41.4%) and 160 females (58.6%). 13 of the 274 patients were ages < 10 representing 4.1%, 1 patient of ages 11 to 20 representing 0.4%, 106 patients of 21 to 30 representing 38.7%. Others are 84 patients of ages 31 to 40 representing 30.1%, 48 patients of ages 41 to 50 representing 17.5% and 22 patients that are above 50 years representing 8%. Age group 21-30 years and 31-40 years constitute the largest (39.0% and 31.0%) of co-infected clients respectively (Figure 1). The percentage of infected females was $160/274 = 58.6\%$ and the rest were male. (Figure 2).

Table 1 shows the number of patients that are within the normal range of CD4 cell count (500 – 1,600 cell count/ul) is 7 which represent 2.6% ($P = 7/274 = 2.6\%$) of the total during the period under review. Also, the number of patients

that there CD4 count are > 350 cell count/ul is 28 representing 10.2% ($P = 28/274$) while those that are < 350 represent 89.8% ($P = 246/274$).

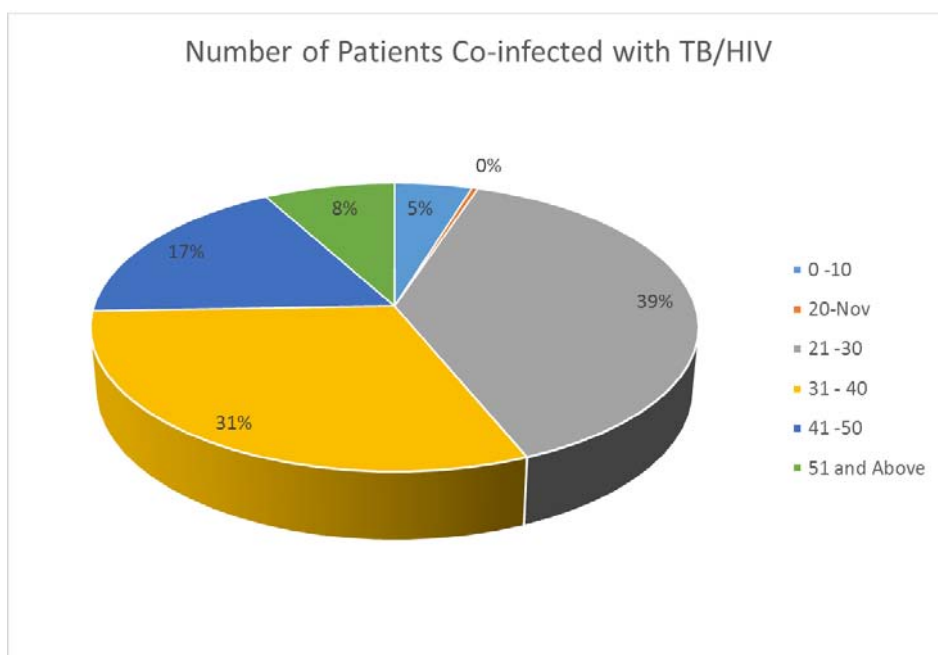


Figure 1. Age distribution of TB-HIV co-infected clients.

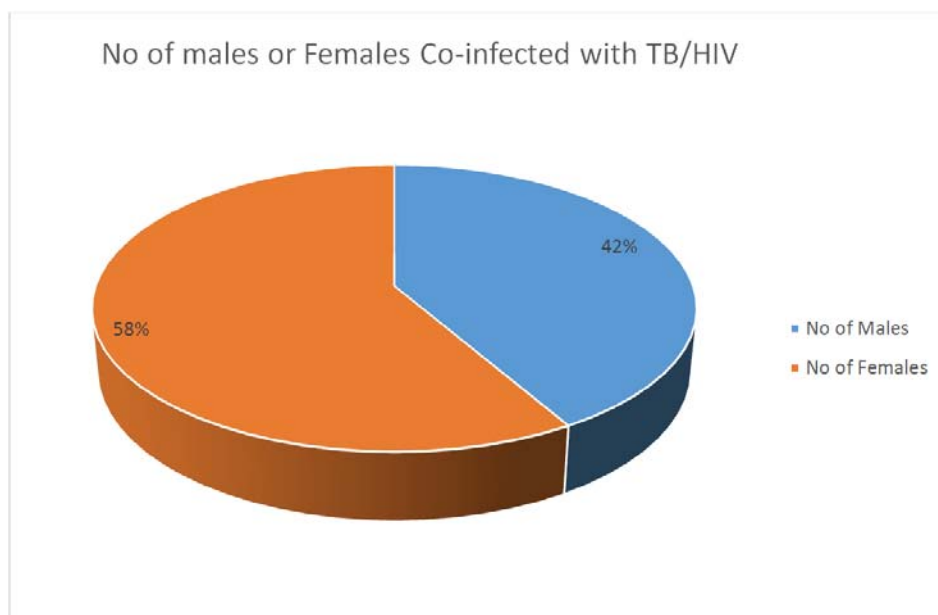


Figure 2. Sex distribution of TB-HIV co-infected clients.

Table 1. Correlates of TB/HIV co-infection.

	Co-infection
CD4 count pattern	
> 350	28 (10.2%)
< 350	246 (89.8%)
Total	274

4. Discussion

The study revealed that females are more susceptible to TB/HIV co-infection than males by acquiring 58.6% of the total figure, the reason being that women bear a disproportionate burden of poverty, ill-health, malnutrition and disease worldwide. This is supported by a study

conducted in 1996 by the World Bank, WHO and Harvard University that TB as a leading cause of “healthy years lost” among women of reproductive age. This is also true that women in this age group are at greater risk of becoming infected with HIV; hence the co-infection of these two deadly diseases had more impact on females than male.

The study also revealed that only 2.6% of the patients have their CD4 cell count within the normal range < 10.2% are not eligible for HAAT according to the WHO treatment guideline for HIV/AIDS patients by having CD4 > 350 cell/ul this therefore confirmed the immunosuppressive impact TB/HIV on immune system of the patients by reducing the CD4 cells in their system. However, people that are infected with HIV in developing countries develop TB as the symptom of AIDS. The two diseases represent a deadly combination by complimenting each other.

In Nigeria and other resource poor countries, it is solely being used as index of monitoring HIV progression though viral load is more reliable, save its huge cost in resource poor countries. In addition, the fact that CD4 values are influenced by socio demographic, some personal biological and environmental factors could affect the prospect of its used in diagnoses and monitoring of HIV/TB co-infections. Latent TB infection has been known to revert to active TB following new infection in HIV infected people. TB has been shown to accelerate the progression of HIV disease.

CD4 cell count is readily available unlike the viral load which better monitors but which many programmes could not afford. CD4 going up may be an index of an improving adherence to HAART based on calculated adherence percentage. Most PLWHAs in Nigeria would most likely be on first line drugs with good adherence strategies. Shifting to 2nd line ART would have several implications for programmes and the health systems in terms of funding and monitoring to prevent and reduce the high mortality and morbidity known to be associated with TB-HIV co-infection compared to single case TB or HIV.

5. Conclusion

Co-infections of TB and HIV are common. The CD4 cell counts of patients attending TB clinic during the period October, 2009 to June, 2011 is affected by the co-infection of TB/HIV. Every HIV positive client should be considered having the potential of contracting TB. This underscores the importance of proper screening, monitoring and prevention of opportunistic infections most especially TB.

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