
TB/HIV CO-INFECTION RATES AMONG PATIENTS ATTENDING SECONDARY HEALTH CENTRE'S IN GBOKO METROPOLIS OF BENUE STATE, NIGERIA

Aernan, P.T, Akande, T and Yange, T.S.
Department of Biological Sciences
Federal University of Agriculture, Makurdi, Nigeria
tracernan1@yahoo.com

ABSTRACT

Three hundred and four (304) blood and sputum samples were collected from patients attending General Hospital, NKST Hospital Mkar, Public Health care centre and Baki clinic and maternity all in Gboko Local Government Area of Benue State. Viral antibody detection technique was adopted, a WHO approved ELISA kit called 'determine' was used to analyze blood samples while ziehl-Nelson staining technique (microscopy) was used to analyze sputum samples. Of the 304 patients screened, 226 (74.3%) were HIV positive, 171(56.3%) were T.B positive and 93(30.6%) had co-infection. The rate of co-infection was higher among males 46(36.3%) than females 44(26.0%). Co-infection was found to be statistically associated with age and marital status, with 31-40 age group (41.2%) showing higher frequency of co-infection. Preventive measures should be taken into account other than curative through proper health education and routine HIV screening should be encouraged.

Keywords: HIV, T.B ,CO-infection, ELISA, Ziehl-Nelson.

INTRODUCTION

The twin infections of HIV and TB remain serious health issues in developing countries, TB/HIV co-infection crisis are twice as much as previously thought (WHO,2008). They were at least 1.37million cases per 100,000 populations. It is estimated that the people who died worldwide of TB, 456,000 were infected with HIV (WHO, 2007). CDC reports that, worldwide TB is one of the leading causes of death among people infected with HIV. People infected with HIV (the virus that causes AIDS) are more likely than uninfected people to get sick with other infective diseases. TB (tuberculosis) is one of these diseases. Without treatment, as with other opportunistic infections, HIV and TB can work together to shorten the life of the person infected. (CDC, 2011). There are estimated to be over one million people worldwide with TB and HIV co-infections. The burden of disease through HIV/TB co-infection is particularly high in sub-saharan African, and the dual epidemics of TB and HIV are of growing concern in Asia. The current challenge is to find ways of preventing both TB and HIV, and to improve diagnosis and management of co-infection (WHO, 2011). In affected countries in Africa, HIV-driven TB increasingly challenges the capacity of health systems to cope. There is an acute need to define optimal timing of antiretroviral therapy during TB treatment and to find better alternatives to current drug regimens (WHO, 2011).

MATERIALS AND METHODS**Ethical clearance**

Ethical clearance was obtained from the ethical committee of the health centers before the collection of samples commenced. No contact was made between the patients and the

researchers. Samples used for the study were those collected from patients by designated hospital staff for laboratory analysis.

Sample collection

Blood samples for HIV screening were collected by pricking the left hand thumb of subjects using a lancet. The upper part of the patient's thumb was disinfected using a swab soaked in methylated spirit. Using disposable sterile haematocrit tube, blood was collected. A different lancet and haematocrit tube were used for each sample collected and labeled. Subjects comprised of patients diagnosed to be positive for HIV and co-infected with TB, attending General Hospital, NKST hospital Mkar, public Health care centre (PHCC), and Baki maternity Clinic all located in Gboko Local Government Area of Benue State. Early morning sputum samples were aseptically collected using the sputum cups, patients were cautioned not to add saliva to the sputum samples.

Test Procedure

The Abbot determine HIV -1/2 test kit was used for the HIV detection. This test kit was brought to room temperature and the protective foil seal was removed from each strip before use. The whole blood from the haematocrit tube was dropped at the sample pad and allowed to stand for 15-30 seconds before the HIV running buffer was added. The test results were read visually after standing for 5-10 minutes, at room temperature. Using the applicator stick, a faint smear of the sputum was made on a labeled slide carefully looking out for stained spots or blood spots in the sputum. The smear was air dried and fixed by passing it through the flame. The smear was covered with filtered strong carbol fuchsin stain which was heated until steam just began to rise. Heated stain was then allowed to remain on the slide for five minutes. The stain was then washed off with clean tap water. 3% acid alcohol was used to decolorize the smear for five minutes until turned pale pink; smear was again washed with clean tap water. Methylene blue was used to cover the smear for 1-2 minutes, this was again washed off with clean tap water. The stain was then examined under the microscope using 40x objective to view the distribution of the material and then systematically with the oil immersion 100x objective to detect AFB (Acid fast bacilli).

RESULTS

Three hundred and four (304) patients were involved in the study, 135(44.4%) males and 169(55.6%) females. 93(30.6%) of the study population were co infected with TB and HIV. Of the 304 patients, 226(74.3%) were HIV positive with females showing a higher percentage, 134(79.3%) than males 92(68.2%) while 171(56.3%) were TB positive with males showing a higher percentage, 90(66.7%) than females 81(47.9%) (Table 1). Age distribution of patients in the study is presented in Table 2; the highest age group for HIV was 21-30 years while 31-40 years had the highest percentage for TB infection and co-infection. Co-infection rate was higher among married patients 54(34.8%) than single patients 26(21.3%) (Table 3).

Table 1: Sex distribution of HIV, TB and TB/HIV co-infection

	HIV positive cases	TB positive cases	TB/HIV co-infection	Total
Sex	N(%)	N(%)	N(%)	N(%)
Male	92(68.2)	90(66.7)	49(36.3)	135(100)
Female	134(79)	81(47.9)	44(26.0)	169(100)
Total	226(74.3)	171(56.3)	93(30.6)	304(100)

Key: N =number of subjects
% =percentage

Table 2: Age distribution of HIV, TB and TB/HIV co-infection

Age (yrs)	HIV Positive casesn(%)	TB positive cases n(%)	TB/HIV co-infection (%)	Total n(%)
0-10	11(100)	0(0.00)	0(0.00)	11(100)
11-20	42(100)	0(7.oi)	0(0.00)	42(100)
21-30	67(75.3)	42(47.2)	23(25.8)	89(100)
31-40	66(68.0)	71(73.2)	40(41.2)	97(100)
41-50	30(75.0)	31(77.5)	22(55.0)	40(100)
51-60	6(42.9)	12(85.7)	4(28.6)	14(100)
61	4(36.4)	8(72.7)	1(9.09)	11(100)
Total	226(74.3)	171(56.3)	93(30.6)	304(100)

KEY: n =number of subjects
% =percentage

Table 3: Marital status of HIV, TB and TB/HIV co-infection

Marital status	HIV positive n(%)	TB positive n(%)	TB/HIV co-infectionn(%)	Total (%)
Married	101(61.6)	120(73.2)	57(34.8)	164(100)
Single	109(89.3)	38(31.1)	26(21.3)	122(100)
Divorce	16(88.9)	11(61.1)	9(50.0)	18(100)
Total	226(74.3)	171(56.3)	93(30.6)	304(100)

Key: N =number f patients
% =percentage

DISCUSSION

From the present study, (55.6%) were females. Amita Gupta and others highlighted the profound impact of HIV/TB co- infections on mothers and children. More women die of TB than from all other causes of maternal causes of mortality combined. Maternal TB/HIV co-infection is an important risk factor for pediatric TB and mortality in children. Maternal HIV viral load, CD4 Count, breast feeding, use of antiretroviral drugs and co-infection with materials are well established factors associated with vertical HIV transmission, also pregnant women may be more vulnerable to developing TB due to immune system changes (Th-1 down-regulation) during gestation.(Gupta *et al*,2011). The 31-40 age group showed higher infection rates for TB and HIV/TB co-infections, this age class is the sexually active group, also morbidity and mortality increases with age. The incidence of TB has increased logarithmically with growth of the HIV epidemic and has been associated with a changed age distribution, resulting in the TB burden transferring from the elderly to young adults. The higher the increase in the number of infected cases, the higher the rate of transmission and hence the morbidity rate proper health education and sufficient treatment facilities will help curb the spread of these twin infections , thus reducing the number of morbidity among the population. The high rates of infection with TB observed could be attributed to the fact that HIV is already a looming problem not only in Nigeria but the entire globe thus making it a global concern. Education and re- education of the public remains one of the potent tools available for combating the twin infections of TB and HIV. Government can provide proper facilities to effectively screen blood and other body fluids before they are transfused to reduce HIV infection rates among children.

ACKNOWLEDGEMENT

The authors are grateful to the authorities and management of General Hospital Gboko, NKST hospital Mkar, Public Health care centre, Gboko and Baki clinic and Maternity,Gboko, for permission and access to laboratory facilities to carry out this study. Staff at these centres are also acknowledged for their co-operation during the period of study.

REFERENCES

1. WHO (2008) "Epidemiology" Global tuberculosis control: Epidemiology, Strategy, is financing. Pp:6-33.
2. CDC (2011) Centre for Disease control and prevention 1600 clifton RD, Atlanta, GA 30333,USA SIO-CDC-INFO(800-232-4036) TTY(888) Cdcinfo@cdc.gov. <http://wwwcdc.gov/tb/topic/TRHIVcc>.
3. WHO(2011) TDR for research on disease of poverty. Unicef-undp-world bank.WHO. <http://apps.who.int/tdr/svc/research/evidence-treatment-tb>.
4. Science daily(2009); Alarming new data shows TB/HIV co-infection. A bigger threat. [Http://wwwsciencedaily.com](http://wwwsciencedaily.com).

5. Ojo, D.A, Mafiana.C.F and Adeniran –sonola (2007): Prevalence of Mycobacterium tuberculosis in Abeocuta, Ogun State, Nigeria journal of parasitology 28(1) 39-42.
6. Grupta, A., Bhosale, R, Kinika, A. *et al.*,(2011)(SWEN india study team). Maternal tuberculosis: a risk factor for mother to child transmission of human immunodeficiency virus. Journal of Infectious Diseases 203(3): 358-363.
7. Friedland,G., Churchyard , G., Nardel, E.(2007). TB and HIV co- infection: Current State of Knowledge and research priorities. Journal of Infectious Disease 196(1);51-53