

Incidence of Tuberculosis among Human Immunodeficiency Virus (HIV) patients attending General Hospital Bajoga

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Abstract: Incidence of tuberculosis (TB) among patients attending Voluntary counseling and Testing (VCT) clinic at General Hospital Bajoga was determine in order to provide data on the disease burden and suggest ways on controlling the infection if present. A total of 304 HIV sero-positive patients from January to June 2013 were screened for TB. The study revealed 98 (32.2%) were TB positive, of which 63 (64%) were males, while 35 (36%) were females. The highest incidence rate of 47 was seen in the 16-35years age group, followed by 44 observed in the above 35years age group. The less than 15 years age group has the least incidence rate of 7. Retrospective studies conducted from 2010-2012 also revealed a prevalence rate of 52 (15.1%) in 2010, 24 (5.6%) in 2011 and 31 (7.1%).

Key words: Incidence, Gender, Tuberculosis, Retrospective, HIV

I. Introduction

Tuberculosis is a global public health problem, although curable is the leading cause of HIV related illness and death. Tuberculosis and HIV have been closely linked since the emergence of AIDS (Raviglione *et al.*, 1997). Data from World Health Organization (WHO) shows that tuberculosis is the most common cause of death from infectious diseases, causing more death than HIV and malaria combined; it is common in eastern Europe, south east-Asia and sub-Saharan Africa. One-third of the world is infected with tuberculosis, with Africa harbouring about 29% of those infected. However only about 5-10% of those infected develops the disease, and become infectious at some time in their life.

It is a global health priority being a killer disease that manifests in its pulmonary form in up to 70% of cases or as extra pulmonary affecting all parts of the body (Harries *et al.*, 1996). An estimated seven million new cases occur each year, resulting in 2 – 3 million deaths despite being curable and preventable with effective treatment regimens and vaccines (WHO, 2005). Improvement in case identification and compliance with appropriate treatment remains a major challenge (WHO, 2005). The World Health Organization (WHO) estimates that one-third of the World population is infected with *Mycobacterium tuberculosis* resulting in an estimated 8 million new cases of T.B and nearly 2 million deaths each year. Furthermore, approximately 10 million people are estimated to be co-infected with TB and HIV, and over 90% of these dully infected individuals reside in developing nations. In sub-Saharan Africa (Nigeria inclusive) the rates of co-infection exceeds 1000 per 100,000 populations. A retrospective study carried out in Kaduna State from 2008 – 2009 involving 2,187 registered HIV positive patients, at a clinic showed 29% prevalence of co-infection rates.

The general consensus among scholars Worldwide is that there is a link between Tuberculosis and HIV/AIDS. This agreement is as a result of similar conclusions reached from findings of various studies conducted both in the developed and developing countries (WHO, 2005; Elliot *et al.*, 1990). In Nigeria, although incidences of Tuberculosis predate that of HIV/AIDS, reported cases of pulmonary tuberculosis have been on the increase since 1986 when the first case of AIDS was identified and reported. The high prevalence rate of HIV and Tuberculosis in Gombe State necessitates this study. This is especially true of Bajoga, a town where Ashaka Cement Factory is located is a place famous as a hot spot for HIV carriers due to the presence of long journey trailer drivers.

Thus the choice of the General Hospital Bajoga as a case study area for collection of data on the co-infection rate of HIV and TB among patients attending the hospital is therefore appropriate and justified.

Furthermore, although there are confirmed linkages between Tuberculosis and HIV, it has been observed that the nature and association varies from location and ethnic groups (Eliot *et al.*, 1990). Consequently therefore, in a country like Nigeria with large geographical spread, high population, and inadequate resources there is need for more localized studies in order to establish the nature and magnitude of the observed relationship that are location specific for effective clinical management.

This study is therefore aimed at conducting a retrospective study of the rate of prevalence of TB among HIV/AIDS patients attending General Hospital BAJOGA. It is hoped that findings would assist the clinicians in the management of TB/HIV related cases in this community and environs.

II. Materials and Methods

2.1 Study Area

The study was conducted in Bajoga, Funakaye L.G.A Gombe State from January to June, 2013.

2.2 Study Population

The populations used for the study are HIV positive patients attending Voluntary Counseling and Testing (VCT) clinic at General Hospital Bajoga. Eligible subjects are those whose consent are received and have agreed to participate in the study.

2.3 Sample Collection

Sputum samples were collected aseptically from three hundred and four (304) patients in a plastic leak-proof container and sent to the TBL laboratory for analysis. Retrospective data from 2010-2012 was also collected for comparison and further analysis (Cheesbrough, 2006).

2.4 Sample analysis

Sputum samples were processed and stained using the ziehl Neelson staining technique and viewed under the microscope for acid fast bacilli as described by Cheesbrough (2006)

III. Results

The result of the study carried out from January-June 2013 indicates that from the 304 samples screened, 98 (32.2%) were TB positive out of which 63 (20.7%) were males and 35 (11.5%) were females as shown in Table 1.

Incidence rate based on age range is shown in Table 2. Highest rate of 47 was seen in age group 16-35, followed by 44 observed in >35 age group, while age group 0-15 was 7.

Retrospective incidence of TB and HIV co-infection patients from 2010-2012 is shown in Table 3. The result indicated that 52 were positive in 2010, 24 in 2011 and 31 in 2012. A total of 107 positive cases were registered.

The summary of TB and HIV co-infection cases from 2010-June, 2013 is shown in Table 4. For 2010, 345 persons were screened, 52 (15.1%) were positive, while 293 (84.9%) were negative. For 2011, 428 persons were screened, 24 (5.6%) were positive, while 404 (94.4%) were negative. For 2012, 439 persons were screened, 31 (7.1%) were positive, while 408 (92.9%) were negative. From January – June, 2013, 304 persons were screened, 98 (32.2%) were positive, while 206 (67.8%) were negative

Table 1: Incidence of HIV and Tuberculosis co-infection cases based on sex from the month of January – June, 2013

Month	Sex		Total
	Male	Female	
January	10	5	15
February	8	3	11
March	14	14	28
April	5	6	11
May	13	4	17
June	13	3	16
Total	63	35	98

Key: Total number of persons screened is 304

Table 2: Incidence of HIV and Tuberculosis co-infection cases based on age from the month of January – June, 2013

Month	Age range (years)			Total
	0-15	16-35	>35	
January	2	6	7	15
February	1	1	9	11
March	2	14	12	28
April	0	10	1	11
May	1	9	7	17
June	1	7	8	16
Total	7	47	44	98

Key: Total number of persons screened is 304

Table 3: Retrospective incidence of HIV and tuberculosis co-infection Cases in General Hospital Bajoga from 2010 - 2012

	Jan.		Feb.		Mar.		Apr.		May.		Jun.		Jul.		Aug.		Sep.		Oct.		Nov.		Dec.		Total
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
2010	3	2	2	4	4	3	2	2	1	1	2	3	1	2	2	0	1	4	1	5	0	4	1	2	52
2011	0	2	1	0	2	1	0	0	1	1	2	2	1	2	1	0	1	1	0	0	2	2	1	1	24
2012	0	5	1	1	2	2	0	2	0	2	0	3	0	2	1	1	1	1	3	2	1	0	1	3	31
Total	3	9	4	5	8	6	2	4	2	4	4	8	2	6	4	1	3	6	4	7	3	6	3	6	107

Key: F: female, M: male

Table 4: Summary of HIV and Tuberculosis co-infections cases

	Total number screened	Positive cases (%)	Negative cases (%)
2010	345	52 (15.1)	293 (84.9)
2011	428	24 (5.6)	404 (94.4)
2012	439	31 (7.1)	408 (92.9)
2013 (Jan-June)	304	98 (32.2)	206 (67.8)
Total	1516	205 (13.5)	1311 (86.5)

IV. Discussion

The present study (January-June, 2013) showed that the prevalence of Tuberculosis in HIV positive patients is 32.2%. This is similar to 37.5% observed from studies carried out in Benin City, Edo State by Uche and Alozie (2004). Other Reports of similar studies although not from TB hospitals ranged from 12.0% in Ile-Ife (Onipede *et al.*, 1999), 10.5% and 14.9% among children and adults respectively in Sagamu (Daniel *et al.*, 2005), 10.8% in Irrua (Nwobu *et al.*, 2004), 6.1% among those aged 20-40 years in Jos (Anteyi *et al.*, 1996), 23.6% at Nguru (Yusuph *et al.*, 2005), 4.2% in Oyo and 35.1% in Benue States (Odaibo *et al.*, 2006). Others reported 28.12% in Ibadan (Ige *et al.*, 2005), 19.0% in a semi arid region of Nigeria (Moses *et al.*, 2003) and 16.6% in Delta state in a population suspected of TB and HIV (Jemikalajah and Okogun, 2009). This high prevalence rate could likely be attributed to the poor or low standard of living, poor standard of hygiene and bad sanitary habits as practiced by most inhabitants of Bajoga town. The low standard of living is believed to be one of the risk factors for the development of tuberculosis.

From the 98 (32.2%) positive cases observed in this study it was observed that 63(64%) were males while 35(36%) were females. This result showing males more prone to co-infection may be as a result of the life style of the people as males tend to interact with each other unlike females who are mostly restricted to staying at home.

It was also observed that the highest prevalence rate of 47 was seen in the 16-35 years age group, followed by 44 seen in the above 35 years age group. While the lowest rate of 7 was seen in the less than 15 years age group. The prevalence of tuberculosis was higher in males than in females in both the HIV sero-positive and HIV sero-negative subjects. This is in contrast with studies carried out in Europe, North America, and in Uganda where the prevalence rate was higher in females than in males. This trend was found to be highest in the age group of between the ages of 22 and 40 years. This increased prevalence may be due to the fact that persons of these ages are more sexually active, usually with more than one partner, and indulge in the consumption of alcohol and smoking. These habits lead to reduced immunity causing these persons to develop tuberculosis more easily. The higher prevalence of tuberculosis recorded in the males is due to the fact that males are more involved in these habits in Bajoga than females.

This high incidence rates indicates that TB and HIV still remains a burden in the society despite all measures taken to eradicate them.

Furthermore, retrospective studies carried out on TB- HIV co-infection from 2010-2012 showed the incidence rate of 52 in 2010, 24 in 2011 and 31 in 2012. This result is quite alarming. It also showed that there is an increase in the co-infection rate, i.e. 15.1% of persons screened in 2010 was positive, this figure reduced to 5.6% in 2011 but rose again to 7.1% in 2012 and so far 32.2% of those screened in 2013 were positive. The rapid increase in co-infection rate indicates that serious measures should be taken by the relevant authorities towards combating this menace.

V. Conclusion

From this study it is observed that Bajoga town in Funakaye LGA of Gombe State that is highly populated and harbours a lot of poor people of the society, show higher prevalence rates compared to other parts of Gombe North Senatorial District due to poverty, and the crowded nature of the area. Infection with human immunodeficiency virus (HIV) has been reported as an important risk factor for tuberculosis. Tuberculosis continues to occur and is the most common AIDS-associated opportunistic infection. In recent times, a lot of people who suffer from tuberculosis are also HIV sero-positive, it is therefore necessary that patients diagnosed

to be HIV sero-positive should also be tested for *Mycobacterium tuberculosis* infection and be given preventive chemotherapy to prevent the development of active tuberculosis (TB). The youths and young adults should be educated adequately on how to prevent the HIV and tuberculosis infections. The urban areas of Bajoga should be decongested of the activities that attract people to the cities. More jobs should be provided for the youths in the rural areas as this will prevent rural –urban migration. This would reduce the transmission of tuberculosis due to congestion of people and would also improve the quality of life of the inhabitants of Bajoga metropolis and of the inhabitants of the rural areas.

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