

Prevalence of Tuberculosis among HIV/AIDS Patients Attending Zambuk General Hospital

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Abstract: The prevalence of Tuberculosis (TB) among HIV patients attending General Hospital Zambuk of Gombe State, Nigeria was carried out between August and November, 2011. Its association with age and gender was also determined. 180 sputum samples were collected from HIV patients and examined for Acid Fast Bacilli (AFB), in which 26 were positive to AFB showing 14.4% prevalence and 154 were negative to AFB. Based on the age ranges, age range of 41 - 60 showed 20 sputum samples were positive (15.6%) and age range of 21 -40 showed 6 sputum samples were positive (12.2%).

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1. Introduction

Genus mycobacterium are slender or slightly curve, non motile; are aerobic non capsulated and non sporing, measuring 1.4 x 0.2-0.6um. They do not stain easily but once stained they resist decolorisation with dilute acids. They are therefore referred to as Acid Fast Bacilli (AFB). The mycobacteria compose obligate pathogens, opportunistic and saprophytes, (Ochei, 2008). Although it does not gram stain well due to its waxy surface, the organism has a gram positive cell wall. *M. tuberculosis* is best demonstrated using Ziehl Neelson staining technique; it has a slow growth rate of 2-6 weeks (Cheesbrough, 2002). An individual is classified as smear positive only if as smear were positive and there or more smear were read. The microscopic examination of sputum smear for acid-fast-bacilli is a simple and rapid test that is used to provide a presumptive diagnosis of infection of tuberculosis. Both theoretical and empirical evidence suggest that they can still transmit *mycobacterium tuberculosis*. However, both theoretical consideration and empirical observation indicate that transmission occur from smear-positive patients, (Behr *et al*, 1999). Tuberculosis (TB) has existed in humans since antiquity and has been reported as the most common expressive and infective respiratory disease that results from the inhalation of respiratory air droplets infected with tubercle *mycobacterium tuberculosis* (Ojo, D. A, 2007). An estimated 1/3 of the world's population is infected with the bacterium, with the highest prevalence of the disease found in sub-saharan Africa and Asia. (Science Daily 2009) more than half of these live in countries ravage by HIV/ADIS (Sharma S. K *et al*, 2005). However, Nigeria has been noted as among the leading country burdened by the scourge and even ranks 4th among the 22 countries that account for 80% of the world's

TB cases (Egah *et al*, 2004). The emergence of Human Immunodeficiency Virus (HIV) has paved way for the resurgence of *Mycobacterium tuberculosis* infection. While HIV is the most powerful risk factor for the progression of *M. Tuberculosis* infection to TB disease.(Yusuph *et al*, 2005; Van Altena, *et al*, 2007). It has also been noted that HIV patients are highly vulnerable to TB because of their weakened immune systems and the latter is now their number one killer (Science Daily, 2009). Surveillance of HIV among TB patients has been recognized as important as the HIV epidemic continues to fuel TB epidemics. In many countries, HIV prevalence among TB patients is a sensitive indicator of the spread of the HIV into the population (Maher *et al*, 2002). According to WHO estimation at the end of 2000, about 12 million have been infected with tubercle bacilli and HIV in the world, 65% live in Africa. HIV infection is the highest risk factor identified which augments' the reaction of latent infection with tubercle bacilli to active TB. The relationship between TB and HIV infection has been documented in many countries. For example 46.23% was reported from the United States of America. It was also documented in some African countries such as Ghana (46.2%) and former Zaire and democratic Republic of Congo (36%). Similarly studies were carried out in Nigeria showed prevalent rates of 6.1% (Jos), 6.8% (Lagos) and 32.8% (Ibadan) (Kwaru *et al*, 2008).

The Course of Tuberculosis

The tubercle bacillus is a small, rod-shaped bacterium that is extremely hardy; it can survive for months in a state of dryness and can also resist the action of mild disinfectants. Infection spreads primarily by the respiratory route directly from an infected person who discharges live bacilli into the

air. Minute droplets ejected by sneezing, coughing, and even talking can contain hundreds of tubercle bacilli that may be inhaled by a healthy person. There the bacilli become trapped in the tissues of the body, are surrounded by immune cells, and finally are sealed up in hard, nodular tubercles (Britannica, 2009). A tubercle usually consists of a centre of dead cells and tissues, cheese-like in appearance, in which can be found many bacilli. This centre is surrounded by radially arranged phagocytic (scavenger) cells and a periphery containing connective tissue cells. The tubercle thus forms as a result of the body's defensive reaction to the bacilli. Individual tubercles are microscopic in size, but most of the visible manifestations of tuberculosis, from barely visible nodules to large tuberculous masses, are conglomerations of tubercles (Britannica, 2009). The onset of pulmonary tuberculosis is usually insidious, with lack of energy, weight loss, and persistent cough. These symptoms do not subside, and the general health of the patient deteriorates. Eventually, the cough increases, the patient may have chest pain from pleurisy, and there may be blood in the sputum, an alarming symptom. Fever develops, usually with drenching night sweats. (Britannica, 2009).

1. Material and Method

Sampling Methodology

All specimens were collected from in and out HIV patients receiving medication in Zambuk General Hospital, irrespective of their age and sex.

Study Subject

The test group in this study consists of 180 HIV patients of both male and female.

Study Area

The study was designed to cover individuals receiving treatment at Zambuk General Hospital, Gombe State.

Method of Collection of Specimen

Early morning expectorated sputum was collected from all the patients included in the study into a sterile container and labeled appropriately.

Processing of Specimen

On receiving the sputum specimen, macroscopic examination were carried out to observe their appearance whether purulent, mucoid, mucopurulent, muco-salivary or bloody stained.

Smear was done and the specimens were subjected to Ziehl Neelson Staining (ZN) to identify acid fast bacilli (AFB). According to Cheesbrough, 2002.

2. Result and Discussion

Table 1

Gender	No. Screened	No. Positive	Prevalence (%)
Male	95	19	20
Female	85	7	8.2
Total	180	26	14.4

Table 2

Age(years)	No. Screened	No. Positive	Prevalence (%)
1-20	3	0	0.0
21-40	49	6	12.2
41-60	128	20	15.6
>60	0	0	0.0
Total	180	26	14.4

The present study showed that the prevalence of Tuberculosis infection among HIV positive patients attending Zambuk General Hospital is 14.4%. These findings might not be unconnected with the adherence to the managing of HIV and their feeding habits. Likewise in DerSalaam, 15% showed prevalence in patients attending HIV care and treatment (Mtei and Herfort *et al*, 2005). 10.5% were coinfected with TB in Kano (Zubairu and Musa *et al*, 2009). Other Reports of similar studies although not from TB hospitals ranged from 12.0% in Ile-Ife (Onipede and Idigbe *et al*, 1999), 10.5% and 14.9% among children and adults respectively in Sagamu (Daniel *et al*, 2005), 10.8% in Irrua (Nwobu and Okodua *et al*, 2004), 6.1% among those aged 20-40 years in Jos (Anteyi and Idoko *et al*, 1996), 23.6% at Nguru (Yusuph and Lailani *et al*, 2005), 37.5% in Benin City (Uche, A. and Alozie, O. 2004), 4.2% in Oyo and 35.1% in Benue States (Odaibo and Gboun *et al*, 2006). Others reported 28.12% in Ibadan (Ige and Sogaolu *et al*, 2005), 19.0% in a semi arid region of Nigeria (Moses and Adelowo *et al*, 2003) and 16.6% in Delta state in a population suspected of TB and HIV (Jemikalajah and Okogun, 2009). In this study 95 males living with HIV were screened for TB and 19 were positive (AFB positive) showing 20% prevalence, 85 females were screened and 7 were positive giving 8.2% prevalence. According to age ranges, age range of 41 – 60 gave the highest prevalence which is 15.6%, followed by age range 21 – 40 which gave 12.2% and the age ranges of 1 – 20, > 60 gave no percentage prevalence based on the time of this study.

The prevalence rate of TB among HIV infected individuals attending Zambuk General Hospital Gombe is high compared to places like Kano (10.5%), Jos (10.8%), Ile-Ife (12.0%) etc,

which could be as a result of lack of adherence to the drugs given to them and their feeding habits due to poverty but it is relatively low compared to 23.6% of Nguru, 37.2% of Benin city, 35.1% of Benue State, and 16.6% of Delta State.

Limitation of the Study

Only the ZN staining that was carried out to identify the Acid fast Bacilli (AFB) due to lack of materials and equipments, other tests were not carried out.

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