Laboratory Identification of Pulmonary TB Using Simple Rapid Techniques in Osogbo South Western Nigeria

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Abstract: The study shows laboratory diagnosis of TB. The study tends to evaluate the detection rate of TB in the referral centres under consideration and the relationship of occupation, demographic characteristics, HIV/AIDS and socioeconomic factors to the high incidence of TB using simple laboratory techniques in the environment. Out of 734 cases presented for tuberculosis, 78 (10.6%) was positive. The age group 16-30 years old had the highest prevalence rate of (13.1%) while the least was age group >75 (4.8%). The effect of tuberculosis with age is not statistically significant (p>0.05).

Keywords: Pulmonary TB, socioeconomic factors, detection rate, referral centers, simple rapid technique, Nigeria

INTRODUCTION

Tuberculosis known as (TB) is a major communicable disease that caused serious ill health and deaths in many developed and developing countries in the last decades of 20th century (Murray et al., 1990). TB is a problem of global importance. Despite longstanding intense efforts to conquer pulmonary tuberculosis, this disease remains an expanding global health crisis. Among communicable diseases, TB is the 2nd leading cause of death worldwide, killing nearly 2 million people each year (Frieden et al., 2003).

It is a disease beyond borders able to pass through many international borders unnoticed or unchecked as a result of migrations, epidemics, wars and uncontrolled increase in world population. It remains a serious public health problem in developing countries where its incidence is increasing as a result of poverty, malnutrition, overcrowding and deficient health care (Ankrah, 1997). According to the World Health Organization (WHO), about 8.8 million individuals develop active TB disease every year, of which 95% live in developing countries. An estimated 1.6 million people die from TB every year (WHO, 2007).

The registered number of new cases of TB worldwide roughly correlate with economic conditions, the highest incidence are seen in those countries of Africa, Asia and Latin America with the lowest Gross National Products. In Nigeria, TB is common; a prevalence of 9.2% has been reported in one study and a case fatality rate of 12% in 1 sec (Salami and Oluboyo, 2002). According to the WHO (2007)'s report on global TB control, 44% of the new TB cases in 2006 were sputum smear-positive cases (SS+) cases. Since 2002, DOTs (Directly Observed Treatment, short course) coverage has increased rapidly from 55% in 2002-75% in 2006 and subsequently, the total notified cases of all forms of TB nearly doubled from 38, 628 in 2002-70, 734 in 2006. However, only 56% were SS+. The above shows that our laboratory diagnosis has not measured up to the clinical diagnosis of TB.

This study tends to evaluate the detection rate of TB in the referral centres under consideration and the relationship of occupation, demographic characteristics, HIV/AIDS and socioeconomic factors to the high incidence of TB using simple laboratory techniques in the environment.

MATERIALS AND METHODS

Study area: Retrospective study was carried out in two health hospitals namely Ladoke Akintola University of technology teaching hospital and Osun state hospital which was both located in Osogbo metropolitan city, the state capital of osun state. It was carried out between January 1-December 31, 2008. Osogbo is situated in the tropical rainforest belt of south western part of Nigeria with about 500 km from Abuja the Federal Capital.
Territory. It lies approximately on Latitude 40ºN of the 
equator and Longitude 7.34ºE of the Greenwich meridian 
and about 1100 m above the sea level.

Data collection and analysis: The data was collected 
from the person in charge of the unit in accordance to 
written permission obtained from the Osun State 
supervisor of Tuberculosis and Leprosy Control and the 
representative of LAUTECH Teaching hospital as regards 
TB cases. The method employed to stain the patients' 
smears were also collected which is Zielh Neelsen 
Staining Technique as recommended by WHO (2004). A 
routine visit was made to the two hospitals within the 
stipulated period in order to have complete data. The 
Info-two SPSS, chi-square and multiple range test in order 
to determine the level of significant p>0.005 is taken as 
non significance.

RESULTS AND DISCUSSION

The expected results of acid fast bacilli appear as red, 
beaded rods on a blue background which confirmed 
the identity of the strains Mycobacterium tuberculosis. The 
total distribution of sputum-smear results among patient 
attending the two health institutions by age is shown in 
Table 1. Out of 734 cases presented for tuberculosis, 
78 (10.6%) was positive. The age group 16-30 years old 
had the most prevalence rate of (13.1%) followed by age 
group 31-45 years old (13%) while the least was age group 
>75 (4.8%). The effect of tuberculosis with age is not 
statistically significant (p>0.05). Table 2 shows the total 
distribution of sputum-smear results in relation to sex. 
Males (12.3%) were more infected than females (9.1%) 
(p>0.05). Table 3 show the total distribution of sputum-smear results among patients from the two health 
institutions.

Ladoke Akintola University Teaching Hospital had 
the highest prevalence rate of (22.3%). The histogram 
shows the total distributions of sputum-smear results 
among patients attending the two health institutions in Fig. 1. The symptoms of tuberculosis are initially 
similar to those of other diseases and it is not usually for patients 
to consider that the problems would be simple to treat or 
resolve spontaneously. The Acid Fast Bacilli (AFB) smear 
is a rapid, economical and practicable test for bacteriological diagnosis of tuberculosis because of the 
expensive turn-around time for mycobacterial culture (Joh et al., 2007). The result obtained from this study 
indicate that the number of tuberculosis cases tested and 
registered in the two tertiary health institution in Osogbo 
is (10.6%) which is a little lower than (21.3%) in the report 
of Bassey et al. (2005). This could be as a result of 
geographical location and climatic factors within the 
study area. Bassey et al. (2005) conducted their research 
in Federal Capital Territory Abuja while this particular 
project was carried out in Osogbo, Osun State. Out
collaboration between TB and HIV programme is scarce. This study suggests that TB and HIV programs need to collaborate to deliver an effective response to HIV related TB. Improving the diagnostic sensitivity of sputum smear microscopy would improve case detection while wealthy industrialized countries with good public health care systems can be expected to keep TB under control, in much of the developing world like Nigeria, a catastrophe awaits.

The use of cultures or more rapid and modern techniques may not be feasible in countries with poor resources like Nigeria. Sputum smear examination for acid fast bacilli may still remain the cheapest and most prognostic method.

Therefore, methods to improve the diagnostic sensitivity of Ziehl-Neelsen smear should be put in place and else more awareness of tuberculosis and HIV should be geared up by mass campaign among the health sectors so that menace would reduce drastically.

CONCLUSION

In conclusion, it is crucially important that support be given to research efforts devoted to developing an effective TB vaccine, shortening the amount of time required to ascertain drug sensitivities improving the diagnosis of TB and creating new, highly effective anti-TB medications. Without support for such efforts, researchers run the risk of losing the battle against TB.

REFERENCES


