# **Extended Abstract**

# Studies on the Co-infectivity of HIV and Atypical Mycobacteria in Nsukka Local Government Areas of Enugu State

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### Introduction

The increasing worldwide rate of tuberculosis and nontuberculous mycobacteria (NTM) has been attributed to immunosuppresion because of the Human immunodeficiency virus (HIV) plague. The lack of data on the contribution of NTM to mycobacterial infections in Africa including Nigeria has anyway been firmly connected with constrained research facility culture for its disengagement and identification. Tuberculosis (TB) is an infectious disease that primarily affects lungs causing pulmonary tuberculosis but can also affect meninges, intestine, bones, lymph nodes, skin and other tissues of the body. Worldwide, tuberculosis causes 2.9 million deaths annually (WHO, 1998). An estimated two billion persons are currently infected with Mycobacterium tuberculosis and other Mycobacterium species. The rates of increase are even greater in developing countries, primarily because of increased immigration of people from regions of high endemicity, declining socio-economic conditions in densely populated cities and the increasing number of human immunodeficiency virus (HIV) infected individuals (Szabo, 1990). The total number of tuberculosis cases on the Global is expanding and the HIV pestilence is ensnared for this this increased incidence and an expected 3,000,000 people with tuberculosis overall also have AIDS.

The relative proportions of mycobacterial species cultured from AIDS patients vary widely between geographic areas, reflecting the background prevalence of latent M tuberculosis infection in the local population and the frequency with which nontuberculous mycobacteria are encountered in the environment. Disseminated M avium complex infection predominates in most centres in North America and is more uniform in geographic distribution than is M avium complex lung disease unrelated to HIV. TB is more commonly recognized (and appears to be more prevalent) in many regions of the world, particularly in developing nations where the majority of persons have been infected by adulthood, and are thus at risk for reactivated disease. Mycobacterial diseases rank among the most successive and significant entanglements of AIDS.Given their protean manifestations, they should be considered in any patient with known or suspected HIV infection and unexplained fever and constitutional symptoms, with or without obvious focal lesions. The diagnosis is more easily overlooked in AIDS than in non-AIDS patients in part because of the higher frequency of atypical, extrapulmonary and 'cryptic' disseminated presentations.

The total number of tuberculosis cases on the Global is expanding and the HIV pestilence is ensnared for this increased incidence. Nigeria is ranked in top five countries for TB deaths worldwide. Due to the increasing level of immunocompromised individuals resulting from diseases like HIV/AIDS, other nontuberculous mycobacteria (NTM) are beginning to thrive and cause tuberculous infections. The information on the contribution of non-tuberculous Mycobacteria (NTM) to Mycobacterial infections in Africa including Nigeria is scarce due to limited laboratory culture for its isolation and identification. Studies on the co-infectivity of HIV and Atypical Mycobacteria in Nsukka L.G.A. were carried out. Two hundred cases (100 HIV negative and 100 HIV positive patients) were identified out of which 46.5% were male and 53.5% were female. The age ranged between 15 and 71 with mean age of 37.5 years. HIV antibodies were screened using two HIV test kits: the Determine (for preliminary test) and the Gold which was used to check for consistency. CD4+ count was carried out using cytometry (CyFlow®). Acid fast bacilli (AFB) were detected by means of sputum smear microscopy using Ziehl-Neelson staining technique. AFB positive samples were subjected to nested PCR for species identification. T-test was employed to check for statistical significance between the mean prevalence in test and control groups and CD4 count of HIV single infection and co infection with TB. Correlation analysis was also employed to check for relationship between the demographic characteristics and the distribution of the disease. A preponderance of HIV infection was observed among the age group 21-50 years (72.5%) with overall HIV prevalence of 19.4%. The highest AFB prevalence of 26.6% was observed among patients aged 21-30 years, with overall prevalence of 24%. About 79.1% of TB infection occurred at CD4 count less than 400 cells/µl. Molecular analysis of the samples (using nested PCR) showed 97 (78.9%) M. tuberculosis, 14 (11.4%) M. bovis and 10 (8.1%) NTM. The NTM identified was M. avium complex. The prevalence rate of TB/HIV coinfection was 24 (24%) out of which 14 (53.8%) were M. tuberculosis, 5 (20.8%) were M. bovis and 3 (12.5%) were NTM. The highest NTM prevalence of 66.7% was observed among patients aged 21-30 years in the HIV positive group while the highest prevalence of 42.8% was observed among 41-50 years in the HIV negative group.

TB co-infection was significantly associated with CD4+ cell count (P <0.05). Rural settlers and those with lower education were at higher risk to have TB co-infection with HIV (RR =1.40, P =0.002) and (RR = 3.17, P = 0.01) respectively. The data obtained in this study underscores the role of non-tuberculous AFB organisms in pulmonary tuberculosis especially in HIV patients, and is suggestive of the public health implications of DOTS administration without proper discrimination between TB and NTM. Introduction of molecular screening assays that include rapid detection of NTM infections in high burden resource limited settings like Nigeria should be a priority for strengthening the public health response.

**Keywords:** Atypical Mycobacteria, TB/HIV co-infection, CD4 count, AFB prevalence

## **Biography:**

Uju Marie-Esther Dibua is a Professor of Epidemiology and Public Health Microbiology in the Department of Microbiology, Faculty of Biological Sciences, University of Nigeria, Nsukka, Nigeria, with 18 years of teaching and research experience in medical, clinical, pharmaceutical Microbiology and ethnomedical research. She holds a Ph.D in Medical Microbiology (Epidemiology and Public Health Microbiology). Her contribution to science has provided insight into some response measures, prevention and control strategies. She has received several national and international awards including the esteemed Third World Academy of Science (TWAS)/ German Research Foundation (DFG) awards with numerous high impact factor journals to her credit.