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Prevalence of common pathogenic bacterial and fungal agents in smear negative pulmonary tuberculosis patients at selected health facilities of Addis Ababa, Ethiopia, 2011

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Lower respiratory tract infection is an important cause of morbidity and mortality in all age groups. Each year 7 million people die due to direct consequences of acute and chronic respiratory diseases. Infectious lower respiratory disease might be caused by Fungal and bacterial agents. However, in various countries including Ethiopia, individuals who have chronic lower respiratory diseases are mostly suspected as having tuberculosis. Several literatures showed that the prevalence of smear negative pulmonary TB cases was increased in the previous two decades. The mortality rate of smear negative patients was greater than smear positive patients in HIV infected individuals.

Objectives: To determine the prevalence of bacterial and fungal agents on smear negative pulmonary tuberculosis registered patients in selected health facilities of Addis Ababa.

Materials and Methods: A cross sectional study was conducted from November 2010 to May 2011. A total of 229 smear negative Pulmonary TB registered patients in selected health facilities in Addis Ababa were considered and sputum samples were collected from all of them. Common bacterial and fungal agents were detected using microscope and culture techniques. The finding of study was analyzed using descriptive statistic to determine their prevalence of bacterial and fungal agents, Moreover fisher exact & Chi-square tests were used to see association of agents & diseases. Magnitudes of associations were then measured by Binary regression analysis.

Result: Our study has suggests that there was no statistically associated with specific etiology identified in culture except weight loss and shortness of breath for *Mycobacterium* species. Similarly, chest x-ray features were not associated. Among the 229 study participants, 150 (65.5%) showed microbial infection. Infection with fungi, bacteria and *Mycobacterium* species were identified in 120 (52.4%), 48 (20.8%) and 31(13.5 %) respectively. Moreover,198 (86.5%) were negative for *Mycobacterium* species using culture techniques; and out of culture negative Tb cases, 102 (51.5%) and 40 (20.2%) study participants had fungal and bacterial infection respectively. From the isolated genus of fungi and bacteria, *Aspergillus* species and *K.pneumoniae* were the most frequent microbes respectively. Out of drugs were used for testing isolates, 59.8% was showed resistance by isolates and 28.2% of drugs were showed sensitive pattern.

Conclusion and Recommendation: Weight loss and shortness of breath were significantly associated with culture positive *Mycobacterium* species. From this study, fungus was the most frequent infection identified in more than 50% of the study participants. Therefore, based on the findings of this study, we recommend applying multiple conventional culture techniques for isolation of bacterial and fungal agents before patients are registered as smear negative TB cases. It can help to identify the true etiological agents of the disease there by improving the diagnosis and treatment.

Biography

Tekliil Biza Gizaw is working in Ethiopia Health and Nutrition Research institute as researcher and he is the coordinator of Bacteriology and Mycology research case team in the institute. He completed his graduate program in Clinical laboratory sciences at the age of 31 and published more than 5 original articles related to bacterial disease and drug resistance pattern in local journals. He has plenty of experience on conventional culture and drug sensitivity test. And also he is an executive member of Ethiopian medical laboratory association and providing different microbiology course for medical students.

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