ORIGINAL RESEARCH PAPER

Medical Microbiology

PULMONARY TUBERCULOSIS CO-INFECTION IN HIV POSITIVE PATIENTS REPORTING TO THE ART CLINIC IN A TERTIARY CARE HOSPITAL IN NORTH INDIA

KEY WORDS: TB, HIV, CBNAAT

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ABSTRACT

Tuberculosis (TB) is considered the most common serious opportunistic infection in HIV positive patients. It is the manifestation of AIDS in more than 50% of cases in developing countries. We collected data of a total of 449 samples received from ART clinic of HIV positive patients for detection of Mycobacterium tuberculosis by Cartridge Based Nucleic Acid Amplification Test (CBNAAT) method. Since HIV infection leads to increase risk of tuberculosis because it decreases cell mediated immunity hence, it is of utmost importance that all HIV-infected individuals are tested for tuberculosis prior to the initiation of Anti Retrovirus Therapy (ART) in countries like India where tuberculosis is endemic.

INTRODUCTION

Tuberculosis (TB) caused by the acid-fast bacilli, Mycobacterium tuberculosis, is one of the oldest disease known to mankind. It remains one of the most important causes of morbidity and mortality in the developed as well as developing world .It is the manifestation of AIDS in more than 50% of cases in developing countries.According to the 2022 Global TB report, HIV positive patients are 16 times more likely to develop active TB disease than people without HIV.[1] In 2023, of the estimated 10.3 million people who developed TB worldwide, 6.3% were PLHA.[2]In 2022, India estimated 53,000 HIV-TB co-infected cases and 11,000 deaths owing to the coinfection.[1]Globally, the estimated TB incidence rate (new cases per 100 000 population per year) was 133.[2] India contributed the largest share (27% of total TB cases and 33% of total TB deaths), followed by China, Indonesia, Philippines, Pakistan, Nigeria, Bangladesh and South Africa.[2] TB can occur at any time during the course of HIV infection and since it is a communicable disease ,it's early diagnosis and treatment is very important especially in the immunocompromised population.

METHOD

A total of 449 clinical samples that were received for CBNAAT (Gene Xpert) testing from ART clinic was analysed. HIV patients with complaint suggestive of pulmonary tuberculosis were included. HIV patients with history of pulmonary tuberculosis, patients already on antituberculosis Therapy (ATT) were excluded from the study. All the samples were processed according to the manufacturer instructions and since they were collected with the aim of diagnosis, so ethical approval was not required for this study. The identity or information related to identity was not disclosed at any point during the study.

DISCUSSION AND RESULT

In our study, out of the 449 HIV positive patients who attended the Anti-Retroviral Therapy (ART) clinic and received treatment, 24 (5.34 %) were found to have HIV - TB co-infection and remaining 425 (94.65%) were positive only for HIV. In a similar study conducted by Giri PA, Deshpande JD, Phalke DB out of the total 1012, HIV positive patients who attended the ART clinic ,172 (17%) had HIV/TB co-infection and remaining 480 (83%) were HIV positive alone.[3] Another study conducted by Melkamu A Zeru there were a total of 514 participants in the study and of these 187 (36.38%) of them had HIV/TB co- infection .[4]Similarly, Kebede and Wabe conducted a study in South West Ethiopia, where among 296 patients on concomitant tuberculosis and antiretroviral therapy at the hospital treatment centre, only 24 (8.1%) were co-infected by HIV and TB.[5]Hence, the above studies indicate the importance of HIV- TB bidirectional testing. In developing countries, TB is one of the most common life-threatening infections among people living with HIV/AIDS [6] because it decreases cell mediated immunity which increases the risk of progression of latent TB infection (LTBI) into active TB disease. TB unlike other opportunistic infections also disproportionately affects people living with HIV even before a significant drop in CD4+ T cell count is noted.[4] Hence, PLHIV are at an increase risk of TB as immune suppression progressively increases.[7]Therefore, in countries like India where tuberculosis is endemic all HIV-infected individuals should be tested for tuberculosis prior to the initiation of ART [6] and vice versa. Though the treatment of TB in HIV positive and negative individuals remains largely same but ATT should be initiated first followed by ART within 2 weeks to 8 weeks depending on the severity of immune suppression. [7] Several tests like chest x-ray, sputum examination, culture and detection of MTB by other methods help in early detection and treatment, and thus reduction of spread of disease and most importantly in enhancing the quality of life in such patients.

CONCLUSION

PLHA are 3 times more likely to die during TB treatment even when on antiretroviral therapy which itself indicates how important bidirectional testing is in such cases. Bidirectional testing has proven to be a major boost since the timely detection of TB in many asymptomatic HIV patients and screening for HIV in many TB patients helps with the initiation of treatment in both the cases. Despite facing multiple challenges, the collaboration between the two programs has yielded excellent results and helped globally saving more than 7.3 million lives of PLHA through scale-up of collaborative TB/HIV activities since 2005.[7]

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