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Seroprevalence of HIV infection among Tuberculosis patients in a tertiary care hospital

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ABSTRACT

Introduction: Human Immunodeficiency Virus (HIV) is the most powerful risk factor for the progression of Tuberculosis (TB). The interaction between HIV & TB in persons coinfecting with them is bidirectional & synergistic. This study was carried out to determine the seroprevalence of HIV infection among Tuberculosis patients in a tertiary care hospital. **Method:** One year study of 4500 confirmed TB patients was carried out and tested for HIV antibody as per Strategy III, National AIDS Control Organisation (NACO) guidelines. **Results:** Of the 4500 patients screened, 244 (5.42%) were HIV positive. The prevalence of co-infection was higher among males with male to female ratio of 2.34 (171/73) and highest amongst those aged 35 to 50 years. **Conclusion:** Present study showed HIV seroprevalence of 5.42% in tuberculosis patients. Early detection of HIV infection in TB patients will allow early access to care and treatment including ART. This will reduce death and disease among HIV-TB co-infected patients.

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1. Introduction

Emergence of Human Immunodeficiency Virus (HIV) has paved way for the resurgence of Mycobacterium tuberculosis infection. TB accelerates the progression of HIV infection to Acquired Immuno Deficiency Syndrome (AIDS) and shortens the survival of such patients. The two are intricately linked to malnutrition, unemployment, poverty, drug abuse, and alcoholism [1]. Concomitant HIV & TB infection is a lamentable medical phenomenon with dreadful social and economic impact across the globe, aptly described as "Cursed Duet". The two diseases represent a deadly combination, since they are more clinically devastating together than either disease presenting alone [2]. The interaction between HIV & TB in persons coinfecting with them is bidirectional & synergistic. HIV is known to increase the risk of reactivation of TB in people with latent infection and also increases the risk of subsequent episodes of TB from exogenous reinfection. HIV also alters the clinical course of TB cases [3]. Globally 9% of all new TB cases in adults were attributable to HIV/AIDS, as were 12% of the 1.8 million deaths from the TB in the year 2000 [3]. In India, there are over 2 million annual prevalent active TB cases and over 2.5 million HIV-positive individuals [4, 5]. Surveillance of HIV among

TB patients has been recognized to be important as the HIV epidemic continues to fuel TB epidemic [1]. TB is the most common opportunistic infection in HIV infected individuals in India [1]. TB accelerates the progression of HIV & increases viral load 6-7 times. Hospital based HIV seroprevalence studies amongst tuberculosis patients from different regions of India have shown a great variation - the prevalence rates varying from 0.4% to 28.1% have been reported [6]. HIV prevalence among TB patients may act as a sensitive indicator of the spread of HIV into a general population. Detecting HIV among TB patients presenting to the health sector represents an important public health opportunity. Programmatic planning requires the availability of up-to-date data on HIV seroprevalence among different populations of TB patients [1]. Present study was carried out to determine the seroprevalence of HIV infection among tuberculosis patients in a tertiary care hospital.

2. Materials and Methods

The present study was carried out in a tertiary care hospital during the period of July 2010 to June 2011. Selection criteria: Only those TB patients whose HIV status was not known at the time of TB diagnosis and consented to participate in the study were included in the analysis to draw the true prevalence of HIV infection among TB patients. The samples were collected from all TB patients tested in this laboratory. All the samples were collected & tested after written informed consent was obtained

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from the patients and in accordance with the institutional ethical guidelines. Collection & Processing of Sample: TB diagnosis at DOTS center in this hospital was done on the basis of smear microscopy, chest radiography, and clinical signs/symptoms as per the Revised National Tuberculosis Control Programme (RNTCP) guidelines. Necessary pre and post test counselling of the patients was carried out and detailed history was taken. For HIV testing, venous blood sample (5 ml) was collected in a plain vacuette from all the patients after written informed consent for testing. Blood was allowed to clot for 30 minutes at room temperature (25-30°C) and serum was separated after centrifugation at low speed. HIV antibodies were tested by the three ELISA/Rapid tests protocol as per the guidelines laid down by NACO (Testing strategy III) [7]. Antibodies to HIV (1 & 2) were detected initially using ERBALISA test (Transasia Bio-medicals Ltd., Daman, India). Samples found reactive by ELISA were confirmed by COMBAIDS test (Span Diagnostics Ltd, Surat, India) and RETROSCREEN test (Qualpro Diagnostics, Goa, India).

3. Results

The study population comprised of 4500 confirmed TB patients who were screened for presence of HIV antibodies. The overall prevalence of co-infection of *M. tuberculosis* and HIV in present study was 5.42% (244/4500).

Of these, 2961 (65.8%) were males and 1539 (34.2%) were females. There were more patients in the 35-50 years age group (29.75%) than in any other age group. Patients less than 15 years of age were the least (9.15%) [Figure 1].

The prevalence of co-infection also varied with age of the patients. It was highest among TB patients aged 35-50 years (6.57%) followed by those aged 25-34 years (6.12%) and least among those aged <15 years (2.43%). In relation to gender, it was 5.78% and 4.74% among males and females, respectively [Table 2].

Heterosexual route (88%) was the commonest route of transmission among HIV seropositive patients in the present study group.

FIGURE 1: Age Distribution

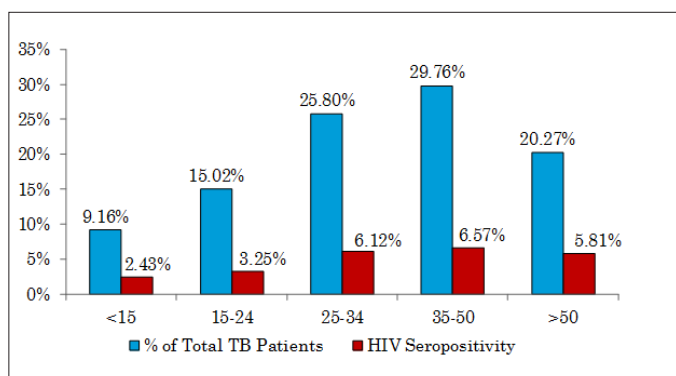


TABLE 1: Age Distribution

Age/sex	No. of Screened TB Patients	No. of HIV Positive in TB Patients	% Positive
<15	412	10	2.43%
15-24	676	22	3.25%
25-34	1161	71	6.12%
35-50	1339	88	6.57%
>50	912	53	5.81%
Total	4500	244	5.42%

TABLE 2: Gender Distribution

Gender	No. of Screened TB Patients	No. of HIV Positive in TB Patients	% Positive
Male	2961	171	5.78%
Female	1539	73	4.74%
Total	4500	244	5.42%

4. Discussion

This study demonstrated HIV seroprevalence among TB patients presenting to the tertiary care hospital was 5.42% as compared to previous reports from Mumbai of 9.4% by Sandhya Sawant et al [1]. Ramachandran et al reported a seroprevalence of 4.7% in Tamilnadu in 1997-1998 [8]. This analysis showed that the use of local surveillance data can improve estimates of TB-HIV burden. The trend observed highlights the importance of continuous surveillance and in-time appropriate preventive measures. These estimates suggest that TB patients may be an efficient source for HIV case-finding efforts in India.

Present study showed highest seroprevalence (6.36%) in the age group of 25-50 years. This suggests that it is better to target this age group for screening & preventive measures. Other workers also reported higher seroprevalence in this age group [9]. This is sexually active group in which both HIV & TB prevails.

Present study showed higher seroprevalence in males (5.78%) as compared to females (4.74%). Similar findings were reported from NACO in their annual report. Sandhya Sawant et al reported higher prevalence in females. This might be due to difference in prevalence in different geographical regions.

India has now implemented a policy of provider-initiated HIV counselling and testing for all TB patients in higher HIV prevalence states. If HIV testing uptake is high, routine reporting of HIV status for all TB patients would provide even better information on which to base future disease burden estimates.

5. Conclusion

Present study showed HIV seroprevalence of 5.42% in tuberculosis patients. Knowledge of HIV status in a TB patient is critical from both patient and public perspectives. In those patients who test seropositive for HIV, better care can be provided in the form of effective combined antitubercular therapy and antiretroviral treatment. It also provides the opportunity to administer prophylaxis for opportunistic infections and thereby reduces morbidity & mortality. A strong coordination is required between the national TB and the AIDS control programmes for effective management of HIV-TB patients.

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