

Research Article

HIV seropositivity in high risk individuals and in pulmonary tuberculosis

Vinod Tyagi, Abhishek Gupta*, S.K. Virmani, Puru Tyagi, Amit Ahlawat

Department of Medicine, Subharti Medical College, Swami Vivekananda Subharti University, Meerut, Uttar Pradesh, India

Received: 31 May 2016

Accepted: 25 June 2016

***Correspondence:**

Dr. Abhishek Gupta,

E-mail: vasugupta792000@yahoo.com

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ABSTRACT

Background: The association between tuberculosis and HIV has been well known. South Asia especially India is witnessing largest number of new AIDS cases and the epidemic is well established. TB shortens the life expectancy of HIV positive people. Keeping the association between TB and HIV in mind, this study was planned to screen HIV seropositivity in all patients of pulmonary and extra pulmonary tuberculosis. The aim was to study HIV seroprevalence in patients of pulmonary tuberculosis and extrapulmonary tuberculosis of population of Bundelkhand region, India.

Methods: 282 patients of pulmonary or extrapulmonary tuberculosis attending OPD or admitted in wards were included in the study as per inclusion criteria over two years. ELISA was done to detect HIV seropositivity in these patients.

Results: A total of 184 patients were male and 98 were female with 16 and 2 patients who were seropositive respectively. Out of 282 patients of pulmonary and extra pulmonary tuberculosis 35 (12.4%) had heterosexual promiscuity. Out of these 15 (42.35%) were HIV seropositive. A total of 115 patients were sputum smear positive for TB and 167 were confirmed as cases of sputum smear negative TB.

Conclusions: The prevalence of HIV seropositivity among pulmonary and extra pulmonary TB in the present study was 6.38%. Tuberculosis was associated with an increased incidence of HIV. HIV was associated most with heterosexual promiscuity as a risk factor and presented more with extra pulmonary tuberculosis.

Keywords: HIV, Tuberculosis, Co-infection, Extra pulmonary tuberculosis

INTRODUCTION

HIV and *Mycobacterium tuberculosis* collectively make an explosive mixture. HIV immunosuppression favors tuberculosis reactivation and increases risk of disease in those who are newly infected.

South Asia especially India is witnessing largest number of new AIDS cases and the epidemic is well established in this region according to United Nations Population Fund Study "the state of world population" in 1997.

Estimates by WHO indicate that there are more than 9 million new active cases of TB and close to 2 million deaths per year and 2.6 million new cases of HIV and 1.8 million AIDS related deaths occur per year.^{1,2}

The association between tuberculosis and HIV has been well known. Pitchenk et al had reported an increase in the prevalence of extra pulmonary tuberculosis and a prevalence of atypical chest X ray findings in patients of HIV.^{3,4}

TB shortens the life expectancy of HIV positive people because it takes hold at an earlier stage of immune deficiency than most other opportunistic infections. Keeping the association between TB and HIV in mind, and in view of the more recent trends of spread of HIV into rural areas, where most of the population lives, coupled with the limited resources at our disposal, this study was planned to screen HIV seropositivity in all patients of pulmonary and extra pulmonary tuberculosis admitted in MLB medical college, Jhansi.

Studies elsewhere have indicated that certain groups such as truck drivers, commercial sex workers, inmates in mental hospitals etc. have an increased proclivity for HIV seropositivity. Hence this study also intends to highlight the increased proclivity of HIV seropositivity in these certain individual groups.

The objective of the study was,

- To study HIV seroprevalence in patients of pulmonary tuberculosis and extrapulmonary tuberculosis of population of Bundelkhand region.
- To study certain individual groups who are at high risk of developing HIV infection due to profession or lifestyle such as commercial sex driver, drug addicts, jail inmates, spouses and children of HIV positive homo and heterosexuals.

METHODS

The study was conducted over a period of 2 years. The study population included;

- Patients of pulmonary and extra pulmonary tuberculosis admitted in Medicine Ward, TB and chest ward and OPD.
- High risk individuals and truck drivers, Jail inmates, spouses and children of HIV positive individuals etc. through hospital and camps.
- Patients with other diseases (not known Tuberculosis and extra pulmonary tuberculosis) which are often associated with HIV infection eg. Herpes zoster, oral thrush, chronic diarrhoea, nonspecific adenitis, meningitis.

The criteria for selecting patients were as follows:

Pulmonary tuberculosis with following radiographic presentations:

- Mediastinal lymphadenopathy
- Cavity or local focal infiltrates
- Lower lung infiltrations
- Miliary shadows
- Pleural effusion
- Cavitory lesion in different lung fields

Extra Pulmonary Tuberculosis

- Chest X-ray (PA view/Lateral view)

- Smear examination for AFB from secretion
- Thoracocentesis and pleural biopsy (as and when required)
- Culture for *M. tuberculosis* from secretion or tissue (as and when required)
- FNAC of suspected lesion of site
- CSF for tubercular meningitis patients

The methods for detecting HIV infection was ELISA test done on samples collected after venipuncture.

A comprehensive history was taken including the high risk behaviour such as sexual promiscuity and homosexuality.

Patients were then classified into HIV seropositive and HIV seronegative. Also patients were classified into pulmonary and extra pulmonary tuberculosis. Then a descriptive analysis was done. Correlation between HIV and various presentation of tuberculosis was studied.

RESULTS

282 patients of pulmonary and extra pulmonary tuberculosis were selected. 18 patients were found to be seropositive for HIV. A total of 184 patients were male and 98 were female with 16 and 2 patients who were seropositive respectively (Table 1).

Table 1: Distribution according to HIV status and sex.

Sex	No. of patients	HIV sero-positive	HIV sero-negative
Male	184	16	168
Female	98	2	96
Total	282	18	264

The maximum number of patients was in age group of 21-30 years (36.5%). Out of the total 18 patients who were seropositive 10 cases were in age group of 21-30 years (9.70% out of total). Out of the 282 patients, 131 (46.4%) were from rural areas and 151 (53.5%) were from urban areas. Out of 18 HIV seropositive patients, 10 (6.62%) were of urban areas while 8 (6.10%) had rural background (Table 2).

Table 2: Distribution according to socioeconomic status.

Background	No of patients	HIV seronegative	HIV seropositive
Rural	131	123	8
Urban	151	141	10
Total	282	264	18

Out of 282 patients of pulmonary and extra pulmonary tuberculosis, 35 (12.4%) had heterosexual promiscuity. Out of these 15 (42.35%) were HIV seropositive. 6 out of 282 were IV drug abusers. 11 Out 282 had blood

transfusion in the past, but none reported HIV positive. 1 Out of 5 housewives of HIV seropositive husbands was seropositive. In 224 cases with no known risk factors only 1 was HIV seropositive. 16 out of 18 had heterosexual promiscuity (Table 3).

Table 3: HIV seropositivity according to recognized risk factors.

Risk Factors	No of patients	HIV sero-positive	HIV sero-negative
Heterosexual promiscuity	35	15	20
Homosexual + heterosexual	01	01	00
IV drug abuser	06	00	06
Blood transfusion	11	00	11
Wives of HIV positive	05	01	04
No known risk factors	224	01	223
Total	282	18	264

A total of 115 patients were sputum smear positive for TB and 167 were confirmed as cases of sputum smear negative TB (Table 4).

Table 4: Distribution of tubercular patients according to seropositive and bacteriological status.

Status	No of patients	HIV sero-positive	HIV sero-negative
Sputum positive	115	08	107
Sputum negative	167	10	157
Total	282	18	264

A total of 207 patients had Mantoux positive out of which 2 patients were HIV seropositive and 75 patients were Mantoux negative out of which 16 were HIV positive (Table 5).

Table 5: Distribution according to Mantoux test.

Status	No of patients	HIV seropositive	HIV negative
Mantoux positive	207	2	205
Mantoux negative	75	16	59
Total	282	18	264

Out of 282 cases, 86 were extra pulmonary only. Of these 2 were HIV seropositive. 104 were pulmonary tuberculosis. Of these 6 were HIV seropositive, from 92 cases of both extra pulmonary and pulmonary

tuberculosis, 9 were HIV seropositive. 2 out of 18 HIV seropositive had extra pulmonary tuberculosis.

Distribution of seropositive cases (extrapulmonary) according to organ involved: out of 178 cases of extra pulmonary TB 97 had lymphatic involvement. Out of these, 11 were HIV seropositive. From 32 of pleural involvement, 1 was seropositive. From bone/joint (20), abdominal 9, TBM 19, none reported seropositive.

DISCUSSION

The prevalence of HIV seropositivity among pulmonary and extra pulmonary TB in the present study was 6.38% which is higher or equal to the other Indian studies. Mohanty et al had reported a seroprevalence of 10.15% from Mumbai.⁵ The seropositivity in Pondicherry in 2 studies by Sivarma and Arora was 2.7% and 3.4%.^{6,7} As Mumbai is an industrial city and a port with a large population of commercial sex workers. Sexual promiscuity is more common in metropolis. The increase seroprevalence in this study is for two reasons. Firstly, in place of random screening, only TB cases were included in the study. Secondly, study included more of high risk populations. However, the relatively low prevalence (1.12%) among contacts from Jhansi, India, suggest the import of disease from other parts of country.

HIV seroprevalence in African and Western studies is higher than Indian studies, including the present one. Elliot et al reported prevalence of 66% among cases of sputum positive TB patients in Zambia.⁸ In Ruanda, Batungwnayo found HIV seroprevalence in TB patients to be 88.6%.⁹ In India the seroprevalence of HIV infection is 1-2% (Laal et al) while that of TB is high at 40% (Narain).^{10,11}

The patients were mostly males (88.88%) as seen in other major Indian studies (Anuradha et al and Mohanty et al).^{12,5}

HIV seropositive patients were more from rural than from urban areas. This is different from Rizwan et al who reported 9.6% residents from large towns, 4% from small towns and 2% from rural areas. The difference could be because of less number of cases screened.

Heterosexual promiscuity was the main risk factor in the present study, found in 15 patients of HIV seropositivity. Similar results were found by Mohanty et al and Arora et al.^{5,6}

CONCLUSION

Tuberculosis was associated with an increased incidence of HIV. HIV was associated most with heterosexual promiscuity as a risk factor and presented more with extra pulmonary tuberculosis.

ACKNOWLEDGEMENTS

Authors would like to thank all the participants who took part in the study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Tyagi V, Gupta A, Virmani SK, Tyagi P, Ahlawat A. HIV seropositivity in high risk individuals and in pulmonary tuberculosis. Int J Res Med Sci 2016;4:3176-9.