

HIV Seroprevalence Among Tuberculosis Patients Visiting Rntcp Centre In A Tertiary Care Hospital In Andhra Pradesh

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ABSTRACT

Tuberculosis is the commonest opportunistic infection occurring among HIV-positive individuals in India and it is estimated that 60-70 per cent of HIV-positive patients will develop tuberculosis in their lifetime. We have evaluated the Seroprevalence of HIV infection in patients diagnosed with Tuberculosis and visiting to RNTCP centre for the treatment in a tertiary care teaching hospital, Kurnool, Andhra Pradesh. The study was conducted in Tertiary care hospital in Rayalaseema zone of Andhra Pradesh at RNTCP centre in which 950 patients were screened for HIV over the period of 2 years. World Health Organisation (WHO) approved kit ‘Tridot’ was used for the HIV detection. The incidence of HIV/TB co-infection was determined as a proportion of HIV seropositive individuals to the total number of patients under consideration and expressed as a percentage. It was highest among TB patients aged 21-40 years (78.3%) followed by those aged 41-60 years (1.7%), 18-20 years (20%) and least among those aged above 60 years (25.00%). There is significant association between age and HIV infection among TB patients in this study and the P value is <0.05 was considered to be statistically significant. There has been continued progress in the implementation of collaborative TB/HIV activities but intensified efforts are needed, especially to ensure universal access to antiretroviral therapy.

INTRODUCTION

Tuberculosis (TB) remains one of the world’s deadliest communicable diseases. It is also a major public health problem globally as well as regionally. Tuberculosis is the commonest

opportunistic infection occurring among HIV-positive individuals in India and it is estimated that 60-70 per cent of HIV-positive patients will develop tuberculosis in their lifetime. ⁽¹⁻²⁾

In Asia, the prevalence of HIV infection in TB patients has been lower than that reported from

sub-Saharan Africa⁽³⁾ In urban areas in India, a series of referral center surveys from the late 1990's reported an increasing prevalence of HIV among TB patients. ⁽⁴⁾

In 2013, an estimated 9.0 million people developed TB and 1.5 million died from the disease, 360 000 of whom were HIV-positive. Of the estimated 9 million people who developed TB in 2013, more than half (56%) were in the South-East Asia and Western Pacific Regions.

In 2013, an estimated 510 000 women died as a result of TB, more than one third of whom were HIV-positive.⁽⁵⁾ In addition to the above statement in India, more than 50 per cent of HIV seropositive subjects have been shown to develop active tuberculosis at least once in their lifetime; therefore managing HIV associated TB could be a problem in areas where HIV prevalence is high.^(1,6) We have evaluated the Seroprevalence of HIV infection in patients diagnosed with Tuberculosis and visiting to RNTCP centre for the treatment in a tertiary care teaching hospital, Kurnool, Andhra Pradesh.

MATERIAL AND METHODS

The study was conducted in Kurnool medical college, Kurnool at RNTCP centre in the Department of Tuberculosis and Chest Diseases, over the period for 2 years from June 2007 to June 2009. 950 patients were screened. The study was approved by the Institutional Ethical Committee.

Demographic information about each patient screened was obtained as the sample was collected, such information included sex, and age. Oral informed consent was also obtained from the

patients prior to enrolment. For those below 18 years, permission was sought from their parents/guardians. The study did not interfere with the normal management of the patients.

Sample Collection

Blood samples were collected through venepuncture. The arm of the patient was tied with a tourniquet and the position of the veins disinfected using a swab soaked in methylated spirit. Using a disposable sterile needle and 2ml syringe, blood was collected. A different needle and syringe were used for each sample collected. Each blood sample was transferred into a labelled plastic microtitre tube containing Ethylene diamine tetraacetic acid (EDTA) (anticoagulant). Samples were then transferred in a cold box to the Microbiology Laboratory for screening.

A World Health Organisation (WHO) approved kit 'Tridot' was used for the HIV detection.

Inclusion and exclusion criteria:

Patients were eligible for enrollment in the study if they were aged 18 yr or more, had newly diagnosed pulmonary TB, had no history of previous treatment for TB, had knowledge of their HIV status, resided within 50 km of study site, assessed to be cooperative and willing for DOTS therapy as judged by counselor, had no major complications of HIV disease like encephalopathy, renal or hepatic disease, malignancy or any end stage disease and did not have any medical condition that might interfere with the management of the pulmonary tuberculosis like diabetes, convulsions, serious cardiac or renal disease.

Statistical Analysis

The incidence of HIV/TB co-infection was determined as a proportion of HIV seropositive individuals to the total number of patients under consideration and expressed as a percentage. The chi-squared test was employed as a statistical tool to determine the relationship between sex, age and HIV/TB co-infection.

RESULTS

The study population was made of 950 confirmed Tuberculosis Patients screened for HIV. Of these, 326 (34.4%) were females while 624 (65.6%) were males. There were more patients in the 21-40 years age group (72%) than in any other age group. Patients above 65 years old were the least (30%). The overall prevalence of co-infection of M. tuberculosis and HIV in this population was 78.3%. In relation to gender, it was 34.4% and 65.6% among females and males respectively (Table). There was a statistically significant relationship between gender and viral infection ($p < 0.05$). The prevalence of co-infection also varied with age of the patients. It was highest among TB patients aged 21-40 years (78.3%) followed by those aged 41-60 years (1.7%), 18-20 years (20%) and least among those aged above 60 years (25.00%). There was a statistically significant association between age and HIV infection among TB patients in this study ($p < 0.05$).

DISCUSSION

The published reports about seroprevalence of HIV among tuberculosis patients give highly variable rates worldwide. Eriki et al found that 66% newly

diagnosed tuberculosis patients in Kampala (Uganda) were HIV seropositive. Eilhot et al¹⁹ reported 60% seroprevalence among tuberculosis patients in Zambia. But, Onorato and McCray¹¹ had reported that 3.4% of the 3,077 tuberculosis patients had HIV co-infection in U.S.A.⁽⁷⁾

Of the 15 countries with the highest rates of tuberculosis/human immunodeficiency virus (TB/HIV) co-infection among adults, 12 are in Africa and the others in Asia, including India, Myanmar and Thailand.⁽⁸⁾

In India too, wide variations in HIV seroprevalence among tuberculosis patients have been observed. Solomon et al⁽⁹⁾ found 0.77% of tuberculosis patients HIV positive, in 1991 and a higher seroprevalence, in 1993 (3.35%). Banavaliker et al⁽¹⁰⁾ found 0.5% HIV seropositive in hospitalized tuberculosis cases while Jayaswal et al⁽¹¹⁾ reported 4.0% seroprevalence in Military Hospital, Pune. Mohanty & Basheer⁽¹²⁾ had reported an alarming increase of HIV infection, from 2.56% in 1988 to 10.15% in 1993-94, among hospitalised tuberculosis patients in Mumbai, while Anuradha et al⁽¹³⁾ reported 12 of 3,071 (0.4%) tuberculosis cases positive for HIV from Tuberculosis Research Centre, Chennai.

Zuber Ahmad et al⁽¹⁴⁾ the rising trend of HIV seroprevalence showed nearly three-fold increase, from 0.8% in 1996-97 to 2.82% in 2000-2001 at Aligarh Muslim University, India.

Ramachandran et al⁽¹⁵⁾ mentioned the percentage of HIV prevalence is likely to be higher in tertiary

care centres and lower in peripheral and district hospitals of Tamilnadu.

Jain K et al ⁽¹⁶⁾ proved that prevalence of HIV among tuberculosis patients in Delhi is lower than that reported from other parts of the country. Besides early initiation of ART, the main intervention to prevent TB in people living with HIV is isoniazid preventive therapy (IPT). In 2013, only 21% of countries globally and 14 of the 41 high TB/HIV burden countries reported provision of IPT to people living with HIV. Nafisa Batool Tahir et al ⁽¹⁷⁾ suggests that Testing tuberculous patients for HIV allows early diagnosis and timely starting of HIV treatment thereby providing adequate care to TB-HIV patients.

There was a significantly higher prevalence of HIV/TB co-infection ($p < 0.05$) among females than males. This is probably related to the higher incidence of HIV infection in females which predisposed them to TB as the former is known to activate dormant TB. Women also have a higher susceptibility to HIV infection and are usually exposed to sexual activities earlier than men mainly due to economic circumstances. Furthermore, most African women are so subordinated to their husbands that they have little or no say in issues related to sexual relationships. The study was in an area where polygamy and early marriage thrive. It is therefore possible for one male to be the source of infection to several females.

The preponderance of HIV/TB co-infection among patients aged 21-40 years observed in this study ($p < 0.05$) is similar to some other reports. (18-20) this is a sexually active group in which both TB

and HIV prevail most. Thus there is significantly high prevalence of co-infection.

The most important intervention to reduce mortality among HIV-positive TB patients is ART. In 2013, 70% of TB patients known to be HIV-positive were on ART. This level, however, falls short of the 100% target set for 2015. ⁽⁵⁾

CONCLUSION

The high HIV seroprevalence in this TB patient population is of great concern both in terms of patient management and public health prospective. It also underscores the need for routine HIV serology on all TB patients to avoid adverse drug reactions to anti-tubercular drugs. There is also a need to develop aggressive public awareness, good health education and provide routine HIV screening for TB patients.

The need for continuous surveillance of HIV in tuberculosis patients of Delhi remains, as does the need for preventive intervention among high risk groups identified, in this study and elsewhere.

There has been continued progress in the implementation of collaborative TB/HIV activities but intensified efforts are needed, especially to ensure universal access to antiretroviral therapy (ART).

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Conflict of Interest: None

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- Table - Prevalence of HIV infection among Tuberculosis Patients in relation to gender

Gender	Total No. Screened	Number positive Prevalence (%)
Female	326	34.4%
Male	624	65.6%
Age		
21-40	684	72%
41-60	228	24%
>60	38	4%