

PULMONARY TUBERCULOSIS CO-INFECTION AMONG HIV INFECTED PATIENTS: A HOSPITAL BASED STUDY FROM BIJAPUR, SOUTHERN INDIANadeemaktar Jamadar¹, Mohammed Arifulla K²**HOW TO CITE THIS ARTICLE:**

Nadeemaktar Jamadar, Mohammed Arifulla K. "Pulmonary Tuberculosis Co-Infection among HIV Infected Patients: A Hospital Based Study from Bijapur, Southern India". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 16, February 23; Page: 2725-2730, DOI: 10.14260/jemds/2015/391

ABSTRACT: Tuberculosis (TB) is the most common serious opportunistic infection in Human-immunodeficiency-virus (HIV) positive patients and is the manifestation of AIDS in more than 50% of cases in developing countries. The present study was conducted from July 2012 to June 2014 at Al-Ameen Medical college Hospital, Bijapur, Southern India. The study was carried out to detect the prevalence of tuberculosis among HIV positive patients correlating with their CD4 counts. 90 confirmed HIV positive patients attending HIV-Voluntary Counselling and Testing Center (VCTC) located at the same hospital were included in the study. All were screened for pulmonary tuberculosis by testing early morning sputum samples by direct microscopy of AFB (Acid fast bacilli) stained smear and a base line chest radiograph (CXR) of the subjects as per RNTCP standard uidelines [7]. HIV cases were further classified in correlation with their CD4 count. Of the 90 HIV infected persons, 49 (54.44%) were males and 41(45.55%) were females. Majority of them were in the age group 31-40yrs (47.7%) followed by 21-30 (22.2%). The overall prevalence of pulmonary tuberculosis was 16.66%. Co-infection was found to be higher in males than females (male: female = 9:6), and the age group of 31-40yrs were predominantly co-infected. Among 15 diagnosed pulmonary tuberculosis cases, 9 (60%) patients (7 males & 2 females) had CD4 count below 200cells/ μ l and 6 patients (40%) (2 males & 4 females) had CD4 count above 200cells/ μ l. The study shows total 16.66% TB prevalence in HIV positive patients and rate of tuberculosis is found to be more in patients with CD4 count less than 200(60%). As the tuberculosis is one of the important opportunistic infection in HIV positive patients, the screening for tuberculosis should be made mandatory for all HIV patients and require more strategic preventive measures that enhance body immunity among HIV patients are highly needed as early as possible before they develop active tuberculosis.

KEYWORDS: HIV, Tuberculosis.

INTRODUCTION: Infection with the HIV is the greatest risk factor for the development of tuberculosis (TB), which is one of the most important causes of mortality and morbidity in the world.^[1] Infection with HIV has resulted in a significant increase in TB cases in different regions of the world.^[2] As per WHO report, there are 12 million tuberculosis cases globally.^[3] In populations with a high prevalence of HIV infection, tuberculosis is a major cause of morbidity and mortality.^[4]

In India with 23% global incidence of Tuberculosis cases and 2.3million HIV infections, tuberculosis accounts for 20-25% of deaths among HIV infected patients.^[5,6] Screening of all HIV-infected persons for tuberculosis helps in identifying co-infected patients who require treatment for both infections and to prevent future cases of active TB. Keeping this in view, we decided to screen all HIV infected patients for pulmonary tuberculosis co-infection in our population by strictly adhering to standard guidelines of RNTCP.^[7]

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MATERIALS AND METHODS: This study was conducted from July 2012 to June 2014 at Al-Ameen Medical college Hospital, Bijapur, after taking ethical approval from institutional ethical committee. 90 confirmed HIV positive patients attending Voluntary Counselling and Testing Center (VCTC) located in Al-Ameen Medical college Hospital, Bijapur, were enrolled in the study. After taking informed consent of the patients, those patients who self-reported cough for about 2 weeks along with chest pain and other constitutional/respiratory symptoms are considered as symptomatic; otherwise asymptomatic. Three sputum specimens were collected as per RNTCP guidelines. Diagnosis of pulmonary tuberculosis was done by methods such as direct microscopy of AFB stained smear and a base line chest radiograph (CXR) of the subjects as per RNTCP standard guidelines.^[7]

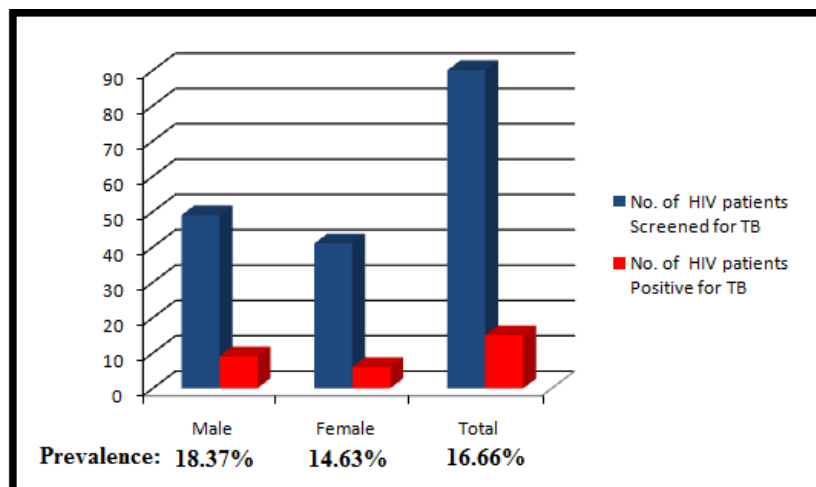
For sputum smear Microscopy, smears were done and the specimens were subjected to Ziehl Neelson Staining (ZN) to identify acid fast bacilli (AFB). Smears were observed and the results were categorised as 3+ (>10AFB/oil field), 2+ (1-10AFB/oil field), 1+ (10-99AFB/100 oil fields), scanty (1-9AFB/100 oil fields) and negative (0 AFB/100 oil fields). For each smear, a total of 100 microscopic fields were examined as per protocol. Base line chest radiographs (CXR) of all the subjects were taken and analyzed by a radiologist and results were noted. The CD4 count of all the patients was done by Flow cytometry.

RESULTS: Of the 90 HIV infected persons, 49 (54.44%) were males and 41 (45.55%) were females. Majority of them were in the age group 31-40 (47.7%) followed by 21-30 (22.2%). The overall prevalence of pulmonary tuberculosis was 16.66% (Table 1, Graph 1). More males were co-infected than females (male: female = 9:6), and the age group of 31-40 were predominantly co-infected as shown in Table 2. CD4+ T cell count of TB infected HIV-seropositive patients is documented in Table 3. Of the 15 diagnosed pulmonary tuberculosis cases, 9 (60%) patients (7 males & 2 females) had CD4 count below 200cells/ μ l and 6 (40%) patients (2 males & 4 females) had CD4 count above 200cells/ μ l.

Gender	No. of HIV patients Screened for TB	No. of HIV patients Positive for TB	Prevalence (%)
Male	49	9	18.37
Female	41	6	14.63
Total	90	15	16.66

TABLE 1: TB status among HIV positive patients

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Graph 1: TB status among HIV positive patients

Age group	TB Positive				TB Negative				Total			
	Male		Female		Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
11-20	-	-	-	-	2	5	4	11.4	2	4.08	4	9.75
21-30	-	-	2	33.3	6	15	12	34.3	6	12.24	14	34.14
31-40	8	88.9	2	33.3	21	52.5	12	34.3	29	59.18	14	34.14
41-50	-	-	2	33.3	9	22.5	6	17.1	9	18.36	8	19.51
51-60	1	11.1	-	-	2	5	1	2.8	3	6.12	1	2.43
>60	-	-	-	-	-	-	-	-	-	-	-	-
Total	9	100	6	100	40	100	35	100	49	100	41	100

Table 2: Distribution of HIV positive patients by TB status, gender and age group

	CD4 Count		Total
	Less or equal to 200 cells/ μ L	More than 200 cells/ μ L	
Male	7 (77.7%)	2 (22.2%)	9 (60%)
Female	2 (33.3%)	4 (66.6%)	6 (40%)
Total	9 (60%)	6 (40%)	15 (100%)

Table 3: CD4 count of TB infected HIV individuals

DISCUSSION: Tuberculosis is now the most common opportunistic infection in patients from developing countries who die from AIDS.^[8] There is evidence that immune responses in tuberculosis induce cytokines that enhance the replication of HIV and this drives the patient into full picture of AIDS.^[9] Reports show that active tuberculosis increases the morbidity and fatality of HIV-infected person and about one-third dies of tuberculosis.^[10]

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Incidence of HIV/TB co-infection was reported to be very high (50%) in sub-Saharan Africa compared to that in Asia.^[11] Several studies showed differences in prevalence rates of HIV-TB co-infections, ranging from 7.7%-28% in different countries worldwide.^[12-15] The rates of HIV/TB co-infection have been reported to vary in different regions of India. It was found to be between 0.4% and 20.1% in north India.^[16] However, the prevalence was 3.2% in 1991, which increased to 20.1% in 1996 in south India.^[17] These differences in prevalence rates in different regions of the country indicates a variation in geographical distribution of the co-infection.

The present study at Al-Ameen Medical college Hospital at Bijapur, Southern India, shows 16.66% prevalence of tuberculosis infection among HIV positive patients, which is lower compared to other south Indian studies done by Padyana et al and Shrivastava et al. Padyana et al^[18] at a tertiary care hospital of South India, among 200 HIV positive patients, showed that 54 (27%) patients had HIV/TB co-infection. Shrivastava et al^[19] demonstrated a prevalence of 20% among 305 HIV-seropositive patients referred from Integrated Counselling and Treatment Center to TB clinic of Southern India.

Tuberculosis can occur at a wide range of CD4 counts, more frequently at CD4 counts < 300 cells/ μ L.^[20] Low CD4 cells in HIV patients results in severely depressed immunity, making these patients susceptible to fresh Tuberculosis infection or reactivation of latent infection.^[21] Due to deterioration of immunity, tuberculosis attributes to a 6 fold to 7 fold increase of viral load in HIV population.^[21] In the present study, CD4+ T cell count <200 cells/ μ L was seen in 60% of TB infected HIV seropositive patients. This finding is consistent with study conducted in different regions of country.^[22,23]

CONCLUSION: HIV really threatens control of TB in developing countries like India. Thus, it should be mandatory to screen every HIV/AIDS patient for TB co-infection and vice versa. Early diagnosis, effective and aggressive treatment of HIV-TB co-infection according to available guidelines, strong commitment, a focused approach as well as strong coordination between national TB and HIV/AIDS control programme is the need of the hour especially in country like India. However, besides advanced research, a lot more needs to be done at all possible levels to combat the menace of this dreadful co-infection.

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