

Original Research Article

A prospective study of spectrum of pulmonary tuberculosis in HIV sero positive patients

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ABSTRACT

Background: Tuberculosis is the leading cause of death in India contributing to 30% of total global burden. Approximately 0.5 million people dies of TB annually and 5% of the incident TB cases in India have HIV. So it is important to understand the effect of tuberculosis and HIV on each other. HIV epidemics have leads to increased number of tuberculosis cases with various presentations.

Methods: It is an observational cross-sectional study of patients with HIV positive and pulmonary TB. Patients were investigated for HIV positivity by HIV coomb's test, if positive confirmed by capillaries and tridot method. Some patients, who are diagnosed as having pulmonary Koch, are sent for HIV testing. CD4 cells count as tested in all patients with HIV positive and severity of pulmonary TB and relation with CD count is studied in all patients.

Results: In chest x-ray of patients we have observed that upper zone infiltration was found in 10 (16.67%) patients, mid and lower zone infiltration was found in 19 (31.67%) patients, bilateral infiltration and miliary tuberculosis was found in 22 (36.67%). We have found that 9 (15%) patients were presented with fibro cavitary lesion.

Conclusions: From present study we can conclude that tuberculosis and HIV is common between 3rd and 5th decade of life with male predominance. It was more common in daily labourer and BMI was 18.22 ± 3.21 kg/m². Fever, weight loss and cough was most common presentation and present in more than 90% patients pallor and lymphadenopathy was common finding and present in more than 50% patients.

Keywords: Pulmonary tuberculosis, Spectrum, HIV, CD4 counts

INTRODUCTION

Despite of development of drug therapy and awareness of people about HIV, it continues to be a major global public health issue, having claimed 36.3 million (27.2–47.8 million) lives so far.¹ Tuberculosis co infection, tuberculosis is still the leading cause of hospitalization of adults and children living with HIV and remains the leading cause of HIV-related deaths.² As per the factsheet of HIV associated tuberculosis an estimated 862 000 people living with HIV (PLHIV) worldwide fell ill with TB in 2018. TB is the leading cause of death among people with HIV, accounting for some 251 000 people who died from HIV-associated TB in 2018 and about a third of

AIDS deaths.³ Tuberculosis is the leading cause of death in India contributing to 30% of total global burden. Approximately 0.5 million people dies of TB annually and 5% of the incident TB cases in India have HIV.⁴ So, it is important to understand the effect of tuberculosis and HIV on each other. HIV epidemics have leads to increased number of tuberculosis cases with various presentations. Jaryal et al has concluded in their study that adequate knowledge of the manifestations of tuberculosis in HIV-infected patients is absolutely necessary for optimal management and to reduce mortality and morbidity.⁵ Takhar et al have also concluded that due to varied clinical presentation of TB in HIV patients, ample knowledge of the clinical spectrum at different levels of

immunosuppression is absolutely necessary to identify such patients early.⁶ Sharma et al has concluded that patients with advanced immunosuppression at presentation were at increased risk for poor outcome.⁷

Based on above literature present study has been designed to study spectrum of pulmonary tuberculosis in HIV sero positive person with special reference to CD4 count with an aim and objective to study the spectrum of clinical manifestation of pulmonary tuberculosis in HIV positive patients and association between CD4 count and severity of manifestation of pulmonary TB in HIV patients.

METHODS

Place of study

Present study has been conducted in the Department of General Medicine Rangaraya medical college Kakinada Andhra Pradesh India.

Duration of study

It has been conducted from November 2016 to August 2021.

Type of study

This is an observational cross-sectional study.

Ethics

Present study is approved by institutional ethics committee. A written informed consent was obtained from all patients before enrolling them for study.

Selection of patients

HIV positive patients admitted to Government General Hospital Kakinada and attending ART centre of GGH Kakinada were selected for study based on inclusion and exclusion criteria.

Inclusion criteria

HIV positive patients (as per WHO criteria) irrespective of the antiretroviral treatment status with consistent clinical features of pulmonary TB (more than 12 years of age group) diagnosed by one of the following means- positive AFB smears, radiological features consistent with TB including imaging studies, like chest X-ray and CT thorax, pleural fluid analysis suggestive of pulmonary TB, histopathology suggestive of tuberculosis and I or demonstration of bacilli in clinical specimens.

Exclusion criteria

HIV positive patients less than 12 years of age. HIV positive patients without pulmonary TB.

It is an observational cross sectional study of patients with HIV positive and pulmonary TB. Patients were investigated for HIV positivity by HIV coomb's test, if positive confirmed by capillaries and tridot method. Pulmonary TB is diagnosed among HIV positive by clinical examination, sputum examination, chest X-ray and blood examinations. Some patients, who are diagnosed as having pulmonary Koch, are sent for HIV testing. CD4 cells count as tested in all patients with HIV positive and severity of pulmonary TB and relation with CD count is studied in all patients.

Investigations

Routine base line investigations like complete haemogram, ESR, LFT/RFT. Sputum AFB for three samples. Chest X-ray - P/A new. Biochemical and bacteriological examination of body fluids in clinically relevant conditions. FNAC/Biopsy of accessible peripheral lymphnodes examined by histopathology and Ziehl-Neelson stain. Other investigations like US abdomen, Ct head/ CT abdomen where ever appropriate. CD4 counts by flow cytometry by standard technique using Becton- Dickinson FAC scan.

Sample size

As per selection criteria 60 patients with coexisting tuberculosis and HIV were enrolled for this study as per selection criteria.

Statistical analysis

Data were recorded in excel sheet and statistical Analysis was done with software Statistical package for social sciences (SPSS)- 14 version. Qualitative data were calculated as percentage and proportions. Quantitative data were expressed as mean \pm SD.

RESULTS

As per selection criteria during our study period we have enrolled 60 patients with tuberculosis and sero positive HIV.

Regarding demography of patients with tuberculosis and HIV, mean age of the patients was 38.46 ± 8.94 years, number of patients having age less than 25 were 13 (21.6%), between 26 to 50 years were 38 (63.3%) and above 51 years were 9 (15%). There was male predominance (M/F= 40/20). We have observed that regarding occupation of the patients, 14 (23.33%) patients were farmer, 18 (30%) patients were daily labourers, 12 (20%) patients were drivers, 8 (13.33%) patients were housewives and 8 (13.33%) patients were from other profession. The mean of BMI was 18.22 ± 3.21 kg/m².

Regarding clinical presentation of patients, fever was present in 56 (93.33%) patients, weight loss was present in 50 (83.33%) patients, cough was present in 58 (96.67%)

patients, haemoptysis was present in 4 (6.67%) patients, anorexia was present in 32 (53.33%), nausea/vomiting was present in 18 (30%) patients. Seizure was present in 4 (6.6%) patients, skin lesions was present in 4 (6.6%) patients, 32 (53.33%) patients have pallor and lymphadenopathy was present in 34 (56.67%) patients.

Table 1: Demography of the patients of Tuberculosis with HIV.

Variable		Number	Percentage
Age (mean 38.46±8.94)	Less than 25	13	21.6
	26 to 50	38	63.3
	More than 51	9	15
Sex	M	40	66.67
	F	20	33.33
Occupation	Farmer	14	23.33
	Daily labourer	18	30
	Drivers	12	20
	House wives	8	13.3
	Others	8	13.3
BMI (kg/m2)		18.22±3.21	

Table 2: Clinical presentation of patients of tuberculosis with HIV.

Variable	Number	Percentage
Fever	56	93.33
Weight loss	50	83.33
Cough	58	96.67
Haemoptysis	4	6.67
Anorexia	32	53.33
Nausea/vomiting	18	30
Seizures	4	6.67
Skin lesions	4	6.67
Pallor	32	53.33
Icterus	1	1.6
Lymphadenopathy	34	56.67

In chest x-ray of patients we have observed that upper zone infiltration was found in 10 (16.67%) patients, mid and lower zone infiltration was found in 19 (31.67%) patients, bilateral infiltration and miliary tuberculosis was found in 22 (36.67%). We have found that 9 (15%) patients were presented with fibro cavitory lesion.

Pulmonary tuberculosis was present in 46.67% patients and extra pulmonary tuberculosis was present 40% HIV patients. Disseminated tuberculosis was found in 8 (13.33%) patients.

Regarding CD 4 counts of patients of tuberculosis with HIV, CD4 cell count less than 50 in 8 (13.33%) patients, between 51 to 200 in 38 (63.33%) patients and more than 200 in 14 (23.33%) patients.

Table 3: Clinical manifestation and x ray finding of patients of tuberculosis with HIV.

Variable		Number	Percentage
X ray finding	Upper zone infiltration	10	16.67
	Mid and lower zone infiltration	19	31.66
	Bilateral infiltration + Miliary	22	36.67
	fibro cavity	9	15
Clinical manifestation	Pulmonary TB	28	46.67
	Extra pulmonary	24	40
	Disseminated	8	13.33

Table 4: CD 4 counts of patients of tuberculosis with HIV.

Counts (cell/microL)	Number	Percentage
Less than 50	8	13.33
51 to 200	38	63.33
More than 200	14	23.33

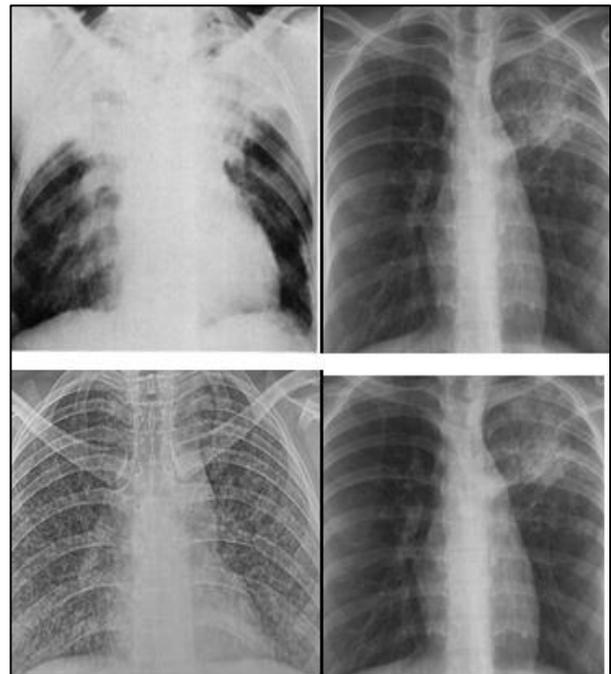


Figure 1: Chest x ray finding of patients with pulmonary tuberculosis and HIV.

DISCUSSION

In present study we have enrolled 60 patients to evaluate the clinical presentation, manifestation, X ray finding and CD 4 count in patient co infected with tuberculosis and HIV. Zumla et al have reported that the nature, presentation, and the clinical and radiological features of tuberculosis depend on the degree of immunosuppression and CD4+ cell count.⁸ In patients with good immunity and normal CD4 count the presentation is same as those in HIV negative persons. Co-infection of tuberculosis and HIV, the overall annual risk of developing active tuberculosis rises by 20 times.⁹

In present study we have observed that mean age of the patients was 38.46 ± 8.94 years and most of the patients were between 26 to 50 years of age and there was male predominance. This finding is supported by the work of Manjareeka et al, Holmberg et al and Zhang et al.¹⁰⁻¹² It was more common in daily labourer and BMI was 18.22 ± 3.21 kg/m². Bhargava et al has reported that more than 85% of men and almost 95% of women were underweight at diagnosis (BMI <18.5 kg/m²), and two-thirds of women and half of men were severely underweight (BMI <16 kg/m²).¹³ Fever, weight loss and cough was most common presentation and present in more than 90% patients pallor and lymphadenopathy was common finding and present in more than 50% patients. This finding corroborates with the work of Ngowi et al and Antwal et al.^{14,15}

In chest x-ray of patients we have observed that upper zone infiltration was found in 10 (16.67%) patients, mid and lower zone infiltration was found in 19 (31.67%) patients, bilateral infiltration and miliary tuberculosis was found in 22 (36.67%). We have found that 9 (15%) patients were presented with fibro cavitory lesion. Padyana et al has reported that most common radiological presentation of tuberculosis was parenchymal infiltration followed by consolidation, cavity, this finding support our study.¹⁶

Pulmonary tuberculosis was present in 46.67% patients and extra pulmonary tuberculosis was present 40% HIV patients. Disseminated tuberculosis was found in 8 (13.33%) patients. This finding is supported by the work of Rajasekaran et al.¹⁷

CD 4 counts of patients of tuberculosis with HIV, CD4 cell count less than 50 in 8 (13.33%) patients, between 51 to 200 in 38 (63.33%) patients and more than 200 in 14 (23.33%) patients. This finding is supported by the work of Jones et al.¹⁸

CONCLUSION

From present study we can conclude that tuberculosis and HIV is common between 3rd and 5th decade of life with male predominance. It was more common in daily labourer and BMI was 18.22 ± 3.21 kg/m². Fever, weight loss and cough was most common presentation and present in more

than 90% patients Pallor and Lymphadenopathy was common finding and present in more than 50% patients. Bilateral infiltration and miliary TB is more common, pulmonary TB was common then extra pulmonary TB. In most of the patients CD4 count was from 51 to 100 cell/microL.

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Conflict of interest: None declared

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

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