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A STUDY OF ATYPICAL MANIFESTATIONS IN PULMONARY TUBERCULOSIS CORRELATING WITH CD4 COUNT IN HIV SEROPOSITIVE PATIENTS

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Abstract- Background: HIV infection is major risk factor for progression to active tuberculosis. The typical symptoms, upper lobe disease and sputum positive for AFB are seen in patients with CD4 T cell count above 200 cells/cu µl. Patients with impaired immunity usually have atypical clinical, radiographic features, extra pulmonary disease and disseminated disease. So, diagnosis requires thorough work up. **Methodology**: The impact of CD4 count on various manifestations of 50 HIV seropositive patients with tuberculosis was studied. **Results**: Majority of patients were in the age group of 30-40 yrs. 58% were males and 42% females. The most common form was pulmonary TB (76%) followed by Pleural effusion (26%). X-ray findings showed bilateral infiltrations in 38% cases; Mid and lower zone infiltration in 26% cases and upper zone in 14%. Majority were Sputum -ve (68%), only 32% were sputum +ve. Mean CD4 count being 146.6±88; Mean CD4 in sputum positive TB was 254.8±77 and sputum negative TB was 97.2±33.8 and extra pulmonary TB was 142.3±55.3. All patients with upper zone lesions in chest x -ray had CD4 > 200 cells/µl and 84.6% of patients with mid and lower zone lesions had CD4 count 50-200. **Conclusion**: CD4 counts correlated well with clinical profile of TB, which showed that when CD4 counts were < 200 cells/µl , sputum negative pulmonary TB and disseminated pulmonary TB were more common. Chest x-ray were atypical in the form of lower zone involvement and more of infiltrative lesion..

Keywords- HIV patients, pulmonary TB, CD4 count, x-ray lesions.

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Introduction

HIV infection is a major threat in the global resurgence and in the control of tuberculosis in developing countries. It is estimated that worldwide nearly two billion people in the world are infected with mycobacterium tuberculosis. Sixteen million are HIV infected and five to six million are dually infected. India reported estimated 5 million HIV infections by 2004. However, co-infection with HIV increases lifetime risk from 10% to 60% of infection with TB [1]. It is estimated that 2 million co-infected with HIV-TB in India. 8% of new cases of TB are due to HIV and 12% of death of TB are due to HIV [2]. In India 40-60% of AIDS, cases will develop TB. In contrast to HIV, infection with M. tuberculosis can be spread via respiratory droplets and close non-sexual contact. The epidemic of HIV associated with tuberculosis showed the major health risk to general public and the health care profession [3]. So, HIV infection is the common risk factor for progression from TB infection to disease. HIV epidemic will lead to increased number of TB cases including smear positive cases, reactivation of TB and susceptibility to new TB infection [4,5,6].

The common opportunistic infection in HIV patient is tuberculosis. In developing countries more than 50% cases of AIDS initially presents with tuberculosis. The death rate in HIV patients with tuberculosis is double than HIV patients without tuberculosis [2]. HIV fuels the spread of MDRTB. HIV infection lead to high default rates because of adverse reactions [4].The severity of tuberculosis varies with immune suppression [1]. Patients with preserved immunity with CD4 +T cells count > 200 cells/cu µl are more likely to have typical symptoms, upper lobe disease and sputum smear positive for AFB. Patient with severe immunodeficiency usually presents atypical clinical and radiographic presentation, extra pulmonary disease including meningitis and miliary TB and absent cavitation. Hence, because of this atypical presentation requires proper investigation to establish the diagnosis.

MaterialsandMethods

HIV seropositive patients admitted to the teaching hospital and were taken up for study for 1 year. 50 HIV positive patients meeting the criteria for the present study.

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 reasons.

- 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 / 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 Tridot method by SD- BIOLINE , Bio standard diagnostic Pvt. Ltd. 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 CD4 count is studied in all patients.

Results

In this study 50 HIV patients with TB were studied, out of this 29 were males and 21 females. The age of study subjects ranged from 19-63 yrs. The mean age was 39.2±9.67 for males and 38.28±9.57 for females.

Maximum no of patients (40%) were in the age group of 30-39 .Common physical findings were BMI<18.5 Kg/m^2 (52%), pallor (52%), lymphadenopathy (36%), oral candidiasis (10%), skin lesions in 12% and oro- genital ulcers(10%).

Among 50 patients with abnormal X ray findings showed upper zone infiltrative lesions in 7(14%), mid and lower zone infiltrative lesions in 13(26%), bilateral infiltrative lesions + military TB 19(38%), fibrocavitory lesions in 6(12%),extra pulmonary lesions (pleural effusion/mediastinal node) in 5 (10%).

In this study CD4 >200 cells was seen in 12 (24%) of patients and 50-200 in 33(66%) of patients and <50 in 5(10%) of patients. Mean CD4 count in this study was 146.6±88.0 [males (145.6±89.8), females (147.6±87.8)]. Mean CD4 count was found to be significantly higher in patients with sputum positive TB (254.8+ _77.3), mean CD4 count was also high in EPTB (142.3 ± 55.3). Mean CD4 count in disseminate (49.7± 14.6) and sputum negative TB is significantly low (97.3 ±33.8) (F=29.8,P,<0.001HS)[Table-1].

Table-1 *Mean CD4 Count and Different Manifestations of Tuberculosis*

	N	Mean	SD Deviation	SD Error
Sputum –ve	24	97.2	33.8	6.9
Sputum +ve PTB	14	254.8	77.3	20.7
Disseminated	3 4	49.7	14.6	8.4
EPTB	9	142.3	55.3	18.4
Total	50	146.6	88.0	12.4
F 29.8		P< 0.001 (HS)		

100% of the sputum negative TB, 88.9% of extra pulmonary TB had CD4<200 cells and 100% of disseminated (miliary) TB had CD4<200, 78.6% of the sputum positive pulmonary TB had CD4>200 which is found to be highly significant [Table-2].

Table -2 *CD4 Ranges and Clinical Manifestation Of TB*

	-ve PTB	+ PTB	Disseminated	EPTB	Total
<50	3 (12.5%)	0	2 (66.7%)	0	5 (10%)
50-200	21 (87.5%)	3 (21.4%)	1 (33.3%)	8 (88.9%)	33 (66%)
> 200)	0	11 (78.6%)	0	1 (11.1%)	12 (24%)
Total	24 (100%)	14 (100%)	3 (100%)	9 (100%)	50 (100%)
CC = 0.683p<0.001 (HS)					

100% of patients with upper zone lesions had CD4 count>200, 15.4% of patients with mid& lower zone lesions had CD4 count <50, 84.6 % had CD4 count 50-200. Upper zone lesions were more in patients with CD4 count >200 which is found to be significant with p value <0.001(HS)[Table-3].

Table- 3 *(CD4 COUNTS AND X-RAY ZONES 100%)*

CD4 COUNTS	Zones		Total
	Upper	Mid/lower lesions	
< 50	0	2 (15.4%)	2 (10%)
50-200	0	11 (84.6%)	11 (55%)
>200	7(100%)	0	7 (35%)
Total	7(100%)	13 (100%)	20 (100%)
CC=0.707		p<0.001 (HS)	

85.7% of patients with upper zone lesions had sputum positive TB and 14.3% had sputum negative TB,92.3% of patients with mid /lower zone lesions had sputum negativeTB.This was found to be statistically significant(p<0.001HS)

Discussion

In this study out of 50 people studied, 58% were males and 42% females. This is comparable to other studies [7,.8]. Most of the people were in the age group 30-39 years ,with mean age of males being 40-45 and females 28-38 yrs, which is comparable to other studies [8,9,10]. Pulmonary TB was ranked as the most common clinical manifestation (76%), extrapulmonary TB (18%) was second and disseminated TB (6%) was 3rd manifestation, which is also comparable to other studies [11].

In this study, sputum positivity was low (32%) comparable to other studies [12,13]. ·Among X -ray findings infiltrative lesions were more common (78%) than the fibrocavitory lesions (12%). Among infiltrative lesions 14% in the upper zone, 26% in mid lower zone, bilateral infiltration+ miliary mottling seen in 38% and extra pulmonary manifestation seen in 10%. All are compared with other studies [13,14]. Among extra pulmonary manifestations lymphadenopathy seen in 16% followed by pleural effusion (16%), meningitis (6%), and ascites (2%), it is also compared with other studies. Mean CD4 count in this study was 146±88 cells/µl, which is similar in other studies. CD4>200 cells/cu µl were seen in 22% of patients while <200 cells/cu µl seen in 78% which is comparable to other studies [15].

In the present study mean CD4 count in patients with sputum positive AFB was 254.8±77.3 and in sputum negative TB was 97.2±33.8, in EPTB was 142.3±55.3 and disseminate TB 49.7±14.6. This difference was found to be statistically significance with a p value<0.001 and hence it showed disseminated TB, sputum negative TB, and EPTB occurs more frequently with lower CD4 count. Among chest X ray findings ,upper zone lesions were found to be more in CD4 count>200 group while mid and lower zone lesions were common in CD4 count less than 200 group which was found to be statistically significant. This is comparable to other studies [16,17]. Maximum no of sputum positive cases (78.6%) were in the CD4 count >200 cells/cu µl group and 100% has disease confined to upper zone, which was found to be significant with p<0.001.

Conclusion

In this study, most common manifestation of TB in HIV infected was pulmonary TB. Sputum negative TB and pulmonary+ extra pulmonary TB was also found. CD4 count correlated well with the clinical profile of TB, which showed when CD4 T cell count were less than 200 cells/cu µl, sputum negative pulmonary TB and disseminated pulmonary TB were more. Chest– X ray were atypical in the form of lower zone involvement and more of infiltrative lesions in these patients. So, clinical suspicion is required in diagnosis of TB in HIV infected, especially when they are in the later stages of disease which is indicated by CD4 counts<200 cells/cu µl.

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