

Clinical Spectrum of Tuberculosis (Pulmonary, Extra Pulmonary and Disseminated) in HIV Patients and Its Relationship With Cd4 Counts.

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Abstract:

Background: The clinical presentation of TB among the HIV infected is dependent on degree of immune suppression. Patient who are severely immunosuppressed are more likely to have atypical clinical features. The symptoms of TB are similar to those of many other opportunistic infections and a thorough work up may be required to establish the diagnosis.

Method: 100 HIV positive patients were selected randomly confirmed with ELISA and Western Blot/ Line Immunoassay positives and were subjected to detailed clinical examination. Pleural fluid analyses were done as and when necessary.

Results: Most common presenting symptoms were fever (78%), cough (75%) and breathlessness (62%). Pulmonary tuberculosis was found in 51% and extra pulmonary tuberculosis predominately TB lymphadenitis was present in 18%. Mean CD4 count in this study was 133.78 ± 76.26 cells /micro l. 71% had CD4 count < 200 cells /micro l.

Keywords: TB, ELISA, HIV, CD4, clinical symptoms.

I. Introduction

Tuberculosis is commonest opportunistic infection in HIV/AIDS patient most cases of tuberculosis in HIV infected patient are due to reactivation of previous lesions. However HIV infection also greatly increases the risk of developing of TB following fresh infection. Tuberculosis may occur or activated at any time after HIV infection, but become more common as the immune system weakens. The clinical presentation of TB among the HIV infected is dependent on the degree of immune suppression. Patients with relatively preserved immune function, with CD4 count +T cell count about 200 cells /micro l are more likely to have typical symptoms, upper lobe disease and sputum smears positive for AFB.

Extra pulmonary disease including meningitis and military TB is also more common in later stages of the disease. The absence of cavitations and combined pulmonary and extra pulmonary disease are seen in more often in patients with lower CD4 counts (1). The current CDC classification categorizes patients on the basis of clinical conditions and CD4+ T-lymphocyte counts (2). The influence of HIV and MTB on immunoregulation by the host is bidirectional. The incidences of post-primary tuberculosis and reactivation tuberculosis are increased in HIV -infected patients in comparison to HIV -seronegative individuals (3,4). However, the incidence of disseminated tuberculosis is much higher in patients with advanced immunodeficiency (5). Recently, it was shown that the risk of developing tuberculosis is already significantly increased in the first year following HIV -antibody sero conversion(6).

II. Methods

100 HIV positive patient were selected through simple random sampling. They were considered for evaluation of mycobacterium tuberculosis infection on the basis of history of prolong fever, marked weight loss, cough more than three weeks not responding to antibiotics and symptoms related to specific organ system. Patients who were HIV positive having positive AFB smears or /and chest x-rays finding or/and biochemical analysis, suggestive histopathology were included in the study. Patients who had history of treated or untreated tuberculosis were excluded. Data was collected by using pretested Performa meeting the objectives of the study. Consent and detail history was taken with respect to risk factor and detail physical examinations were carried out. All routine investigation including chest x-ray sputum AFB, FNAC of lymph node was done. CD4 counts by flow cytometry by standard technique using Becton-Dickinson FAC SCAN.

Following statistical methods were applied in the present study

1. Cross tabs procedures (contingency coefficient test)
2. ANOVA-analysis of variance two ways

(All the statistical operations were done through SPSS).

Observations:

Table 1. Presentations of symptoms in patients

	Symptoms	Number of patient	Percentage (%)
Constitutional	Fever	78	78
	Weight loss	56	56
	Fatigue/lethargy	50	50
Respiratory	Cough	75	75
	Hemoptysis	10	10
	Breathlessness	62	62
	Chest pain	20	20

Table 2. Clinical manifestations of tuberculosis

	Number of patient	Percentage (%)
Only pulmonary tuberculosis	51	51
Only extra pulmonary tuberculosis	43	43
Disseminated tuberculosis	6	6

Out of 54 patients with abnormal x-rays upper zone infiltrative lesions were seen 15(27.77%), upper zone fibrocavitary lesions seen in 2(3.7%), mid zone/ lower zone lesions seen in 30(55.55%), milliary mottling was seen 3(5.66%).

Table 3: Mean CD4 count and different manifestations of tuberculosis

	N	Mean	Sd.Deviation	Sd.error
-vePTB	37	108.49	74.684	12.278
+ ve PTB	14	226.71	52.895	14.137
Disseminated	6	42.50	4.416	1.803
EPTB	43	138.02	58.386	8.904
Total	100	133.78	76.263	7.626

F=16.432; P<0.001

Table 4: CD4 ranges and clinical manifestations of TB

CD4 counts	-ve PTB (%)	+PTB (%)	Disseminated	EPTB (%)	Total
<50	18(48.6)	0	6	5(11.6)	29
50-200	12(32.4)	2(14.3)	0	34(79.1)	48
>200	7(18.9)	12(85.7)	0	4(9.3)	23
Total count	37(100)	14(100)	6	43(100)	100

P<0.001

III. Results

Mean CD4 counts in patients with sputum +ve TB was 226.71±52.895 and in sputum –ve TB was 108.49±74.684 mean CD4 counts EPTB was 138±52.895 and in disseminated TB was 42.50±4.416. Mean CD4 counts was found to be significantly high in patients with sputum + ve TB (p<0.001). 85.7% of the sputum + ve pulmonary TB had CD4 >200 which is found to be highly significant.

IV. Discussion

In this study out of 100 HIV infected patients studied most common constitutional symptoms was fever (78%) followed by cough by (75%). Pulmonary tuberculosis ranked as the most common clinical manifestation 51% had only pulmonary tuberculosis, 43% had EPTB and 6% had disseminated tuberculosis. Among the extra pulmonary manifestation lymphadenopathy was seen in 18% followed by pleural effusion in 11%. Maximum number of sputum positive cases (85.7%) was in the CD4 count > 200 cells / up group and all of these had disease confirmed to upper zone which was found to be statistically significant with p <0.001. Studies have shown that the risk of developing tuberculosis increases with advancing immunosuppression as measured by the CD4 count (8) The mycobacterial load in HIV/TB patients may be high, yet, pulmonary lesions are mostly infiltrative, sputum smears are often negative and frequently the lesions are extra pulmonary.(9) In HIV-infected patients with tuberculosis who have CD4 cell counts of 200 or more per cubic millimeter, chest radiographic findings include upper-lobe infiltrates and cavitation , findings similar to those in HIV -negative patients with tuberculosis(10) Treatment of active tuberculosis always has clinical priority over the treatment of HIV. When tuberculosis occurs in patients with advanced immunodeficiency and less than 50 CD4+ T - cells/micro L, the risk of mortality is high, and parallel treatment of both infections is indicated (11).HIV-

induced immunosuppression modifies the clinical presentation of TB, resulting in atypical signs and symptoms, and more frequent extra pulmonary dissemination and can cause diagnostic difficulties. Heightened clinical awareness remains the mainstay of diagnosis (12). HIV associated tuberculosis has always posed difficult clinical challenges. The symptomatology of both infections is overlapping and general examination may be confounding. X ray abnormalities are all the more non specific in HIV co infected individuals. We saw that lower and middle lobar involvement was commoner than classic upper lobe infiltrates and apico cavitary lesions in the HIV TB co infected group. Sputum positivity rates for AFB are less and extra pulmonary TB may present without classic meningeal signs. CD4+ cells were less than 200 in most of our patients with the co infection. No further correlation could be inferred about the extent of reduction in CD4+ cell count with the extent of dissemination of TB.

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