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Research Paper

Tuberculosis in HIV coinfected patients- Study of clinical profile and laboratory datas with special consideration to CD4 counts at Tertiary care hospital.

Medical Science

KEYWORDS : Tuberculosis, HIV, CD4+T cell counts, co-infection,

Dr. Rahul Vasava — Resident doctor, Department of Medicine, M.P.Shah Medical College, Guru Gobindsingh hospital, Jamnagar.

Dr. Prakash Makwana — Professor, Department of Medicine, M.P.Shah Medical College, Guru gobindsingh hospital, Jamnagar.

ABSTRACT

Global incidence and prevalence of HIV and TB coinfection has created significant problem in developing and developed countries. Tuberculosis is the most common HIV related opportunistic infection in India. Main aim of our study was to carry work up of HIV positive patients who are diagnosed to have tuberculosis and detailed analysis of clinical profile, radiological and laboratory datas with giving special consideration to CD4 counts. With HIV coinfection tuberculosis evolves and manifestate frequently in atypical presentation in different stages of HIV. So difficulties in diagnosis of TB and managing in this scenario is significant challenge as frequently delayed diagnosis of TB and increased incidence of drug resistant TB among such cases occurs.

INTRODUCTION:

HIV/AIDS pandemic has caused resurgence of TB, resulting in increase morbidity and mortality worldwide. WHO estimates that 1.1 million (13%) of 8.6 million people who developed TB worldwide were HIV positive.[1-2]People living with HIV who are also infected with TB are much more likely to develop TB disease than those who are HIV-negative.[3]Tuberculosis and HIV infection make each other's control significantly more difficult.[4] HIV and Mycobacterium tuberculosis have a synergistic action: each accentuates progression of the other and clinical, radiological and laboratory profiles also found to be affected significantly with this duos.[5]Clinical presentation of TB in early HIV infection resembles similar to that observed in immunocompetent persons. However in late HIV infection with advanced immunosuppression, TB is often atypical in presentation, frequently causing low sputum positivity with atypical radiological features and higher rates of disseminated and extrapulmonary tuberculosis, all these can result in delayed diagnosis of tuberculosis.[5]The incidence of tuberculosis in HIVinfected patients is about a hundred-fold than that in the general population.[5]It is estimated that 60-70% of HIV-positive persons will develop tuberculosis in their lifetime.[6]

AIMS AND OBJECTIVES:

- To study the clinical profile of TB and its atypical presentation in HIV coinfected patients.
- To compare and study different clinical, radiological and laboratory datas with special reference to CD4 counts.

MATERIALS AND METHODS:

The study was retrospective analysis of 100 HIV-TB coinfected patients coming to ART centre, Guru Gobindsingh Hospital, Jamnagar, Gujarat during 2010-2011. Analysis done on basis of medical history of illness, presenting symptoms, clinical findings, radiological abnormality and other laboratory datas with special consideration of their CD4 counts.

Following investigations done to establish diagnosis of tuberculosis:

1. Ziehl-Neelsen (ZN) staining of sputum for acid-fast bacilli (AFB) from given sample was performed as per RNTCP recommendations at the designated microscopy centre located within the hospital.

2. Histopathological demonstration of typical caseous granulomatous reaction.

3. Suggestive clinical profile including cough and/ or haemoptysis, fever, night sweats, weight loss or the added features suggestive of TB concerning the involved site.

4. The diagnosis of extra-pulmonary tuberculosis was based on the added features suggestive of TB concerning the involved site with supportive evidence in the form of pleural/ ascitic fluid analysis showing lymphocytic exudative effusion and CSF showing lymphocytic pleocytosis with low CSF glucose.

5. Biochemical and bacteriological examination of body fluids in clinically relevant conditions.

6. Imaging studies whenever applicable:

Chest x-rays, ultrasonography abdomen/local part, CT scan head/chest/abdomen.

RESULTS:

Out of 100 HIV patients coinfected with TB, 74 were males and 26 were females. The common presenting symptoms were fever 74%, cough 70%, weight loss 62%, hemoptysis 15%, breathlessness 34%. A minor number of patients were having loose stools, chest pain, neurological manifestation like altered sensorium and seizure. Types of tuberculosis in study group were: 55% Pulmonary TB, 40% Extrapulmonary TB (Abdominal TB n=4, TB Lymphedenitis n=26, pleural effusion n=7, TB Meningitis n=2, Skin tuberculosis n=1), 5% Dissaminated TB. Out of 55 Pulmonary TB cases, 29 were sputum positive and 26 were sputum negative.

Table 1: The CD4 counts in HIV TB coinfected 100 patients.

CD4 COUNTS	No. of PATIENTS
> 200	32
50-200	57
<50	11

Table2: The correlation of CD4 counts and clinical manifestations of TB.

CD4 Co.	NPTB	PPTB	DTB	EPTB	T
<200	19	20	05	25	69
>200	07	09	00	15	31
T	26	29	05	40	100

NPTB:Sputum negative pulmonary TB, PPTB:Sputum positive pulmonary TB, DTB: Disseminated TB, EPTB: Extra-pumonary TB, T= Total numbers, CD4 Co: CD4 counts.

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The Mean CD4 counts among Sputum positive pulmonary TB patients was 165, for sputum negative pulmonary TB it was 128, for disseminated TB it was 73, for extrapulmonary TB it was 188.

Table 3. The radiological findings of the patiens .

TYPE/LESION	NUMBER OF PATIENTS
INFILTRATIVE	55
CAVITARY	05
FIBROTIC	06
MILIARY	10
EFFUSION	07

Total 73 patients had abnormal chest xrays, rest 27 had normal chest radiographs. Out of 55 patients with infiltrative chest xray lesion, 28 were having upperzone lesions and 17 having middle and lower zone lesions. The finding of synpneumonic effusion were present in 7 patients.

Table 4: The correlation of Chest Xray lesion types and CD4 counts.

CD4 Co.	Chest xray lesion types					T
	INF	FIB	CAV	MIL	EFF	
<200	31	04	03	09	05	52
>200	14	02	02	01	02	21
T	45	06	05	10	07	73

INF: Infiltartive, FIB: fibrosis, CAV: cavitary, EFF: pleural effusion, MIL: military, T: total numbers, CD4 Co: CD4 count.

The CD4 counts also compared with chest xray zones for lesions. Out of 73 patients with abnormal xray findings, 39 patients had upper zone involvement, 29 others had middle & lower zone involvement and rest 5 had all zones involved. Out of 29 patients with atypical middle & lower zone involvement 21 patients (73%) had CD4 counts of less than 200.

DISCUSSION:

In study group most of the patients had symptoms of cough, fever and weight loss and it is well correlated with other similar study Somya swaminathan et al.[7] Our study came out with mean CD4 count of 166 among TB & HIV coinfected patients and it is also found to be close with Somya swaminathan et al, in which mean CD4 was 192.[7] In our study pulmonary TB cases were 55% lowered in comparison to study by Somya swaminathan et al in which they were 72%,[7] and this lower number of pulmonary TB in our study is attributed to significant lower number of mean CD4 counts and that's why in our study immunosuppression found to be higher with more number of extrapulmonary and disseminated tuberculosis. Sputum positivity in our study was lower 29% compared to 72% in study by Somya swaminathan et al due to lower number of cases of pulmonary TB and only fewer cases with cavitary lesion with lower mean CD4 count.[7] Another study Harsha Kumar et al,having 43% cases of extrapulmonary TB and 6% cases of dissemninated TB among HIV coinfected with TB patients[8], found similar to our study. The study Harsha kumar et al has cases of sputum negative TB with mean CD4 count 108, Disseminated TB with mean CD4 count 42, Extrapulmonary TB with mean CD4 count 138 found similar to our study[8], suggesting that significantly increase cases of sputum negative, extrapulmonary and disseminated tuberculosis with advance immunosuppression and low mean CD4 count.Coinfection with HIV not only leads to challenges in the diagnosis and treatment of tuberculosis but also increase in rates of drug resistant tuberculosis, which are difficult to treat and contribute to increased mortality.[9] Because of the low sensitivity of sputum smear microscopy in HIV-infected patients, newer diagnostic tests are required that are not only sensitive and specific but easy to use in remote and resource-constrained settings.[9]

CONCLUSION:

TB can occur at any stage of HIV infection, and its clinical manifestation largely depend on degree of immunosuppression. When CD4 count is >200, TB infection occurred and evolved typical tuberculosis like with pulmonary complains and more upper lobe infiltrative and/or cavitary lesions. But with advance immunosuppression with CD4 counts less than 200, TB known to present as atypical disease findings with diffuse infiltrative lesion on xrays and significant increased number of extrapulmonary and disseminated tuberculosis rather than typical pulmonary TB. On taking account all these findings, it is evident that coinfection of HIV leads to frequent delay in diagnosis and treatment of tuberculosis, as many a times tuberculosis presents with atypical clinical manifestations and unusual radiological and laboratory findings. So, high degree of suspicion and frequent screening for TB in HIV infected patients and also need to adopting more sensitive laboratory methods for diagnosis of tuberculosis.

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