Original article:

Study of pulmonary and extra pulmonary Tuberculosis in HIV patients in co-relation to their CD4 count in Vijayapura district, Karanataka

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Abstract:

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 persons are infected with mycobacterium tuberculosis; sixteen millions are HIV infected and five to six million are dually infected. Patients with preserved immunity with CD4+ T-cells count=200cell/µl/cumm are more likely to have typical symptoms of upper lobe disease and sputum smear positive.

Objectives: Study of pulmonary and extra pulmonary Tuberculosis in HIV patients in co-relation to their CD4 count in Vijayapura district, Karanataka.

Material & Methods: The Study Will Be Conducted For Patients Admitted In Al-Ameen Medical College Hospital Bijapur and District Hospital Vijayapura Combined From December-2013 to May 2015(18 MONTHS). All the Patients with Tuberculosis Co-Infected with HIV were taken for the study. **Observations:** The mean CD4 count in the present study was 246.58 cells/µl. The mean CD4 counts among males were 220.16 cells/µl and 293.08 cells/µl in females. Significantly more number of patients with extra pulmonary TB was having CD4 count >200/µl followed by Pulmonary TB.

Conclusion: A high level of 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/µl.

Keywords: HIV, Tuberculosis, CD4 count

Introduction:

HIV infection is a major threat in the global resurgence[1] and in the control of tuberculosis in developing countries. It is estimated that worldwide nearly two billion persons are infected with mycobacterium tuberculosis; sixteen millions are HIV infected[2] and five to six million are dually infected. TB is the leading cause of death among adults. Normally 10% of those infected with TB bacilli will get TB disease in their life time,[3] however coinfection with HIV increases this life time risk from 10% to 60%. 8% of new cases of TB are due to HIV and 12% of death of TB are due to HIV. Parallel epidemic of TB lead to further spread of TB among general population. Extra pulmonary TB is common in hospitalized patients and pulmonary TB common in community. Higher frequency of negative sputum smears common with dual infection, may requires sputum culture. Chest radiograph may be less useful Clinical presentation dependent on degree of immune

suppression. Patients with preserved immunity with CD4 + T cells count =200 cell/µl/cu mm are more likely to have typical symptoms, upper lobe disease and sputum smear positive.[4] Patient who are severely immunosupressed are more likely to have atypical clinical and radiographic presentation, extra pulmonary disease including meningitis and military TB and absent cavitation.[5]

Material & Methods:

The Study was Conducted among patients admitted in Al-Ameen Medical College Hospital Bijapur and District Hospital Bijapur Combined Hospital from December-2013 to May 2015 (18 months). All the patients with tuberculosis co-infected with HIV were enrolled for the study.

Inclusion Criteria - Patients with HIV infection, both pulmonary and extra pulmonary tuberculosis, both sputum positive and negative pulmonary Tuberculosis. **Exclusion Criteria -** patients without HIV infection are excluded,

Information was collected through prepared proforma which includes detailed history of symptoms including fever, cough, weight loss, night sweats etc. Thorough physical examination of all the system was done. Previous hospital records and investigation and treatment given were also recorded. Detailed history regarding whether they are on anti-retroviral therapy and Tuberculosis treatment was taken. For all the patients CD4 count was done.

Permission from Institutional Ethical Committee and informed verbal consent from patients was taken prior to the study. Data collected was analyzed for the frequency distribution,

Results:

Total 100 patients found in study area during the period of 18 months as per selection criteria. Analysis of the data shows following observations,

Figure 1 shows age & sex distribution of patients and Figure 2 sex and occupation distribution among patients. Out of 100 study subjects, 64 male and 36 female patients were found. Majority of patients were in the age group of 31-40yrs (fig-1) and were labourers among both or housewives among female (fig-2).

Figure I: percentage distribution of patients according to age & sex

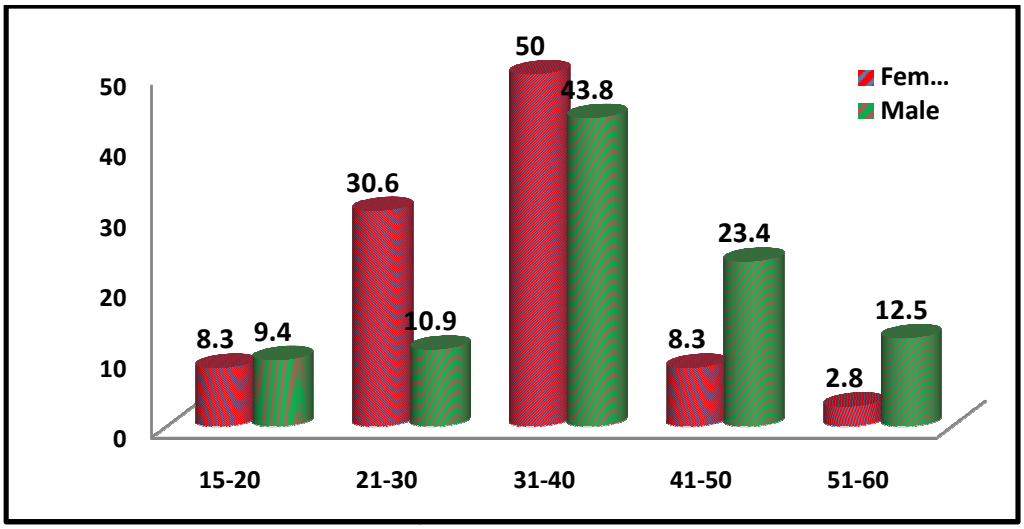

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Figure II: percentage distribution of patients according to occupation & sex

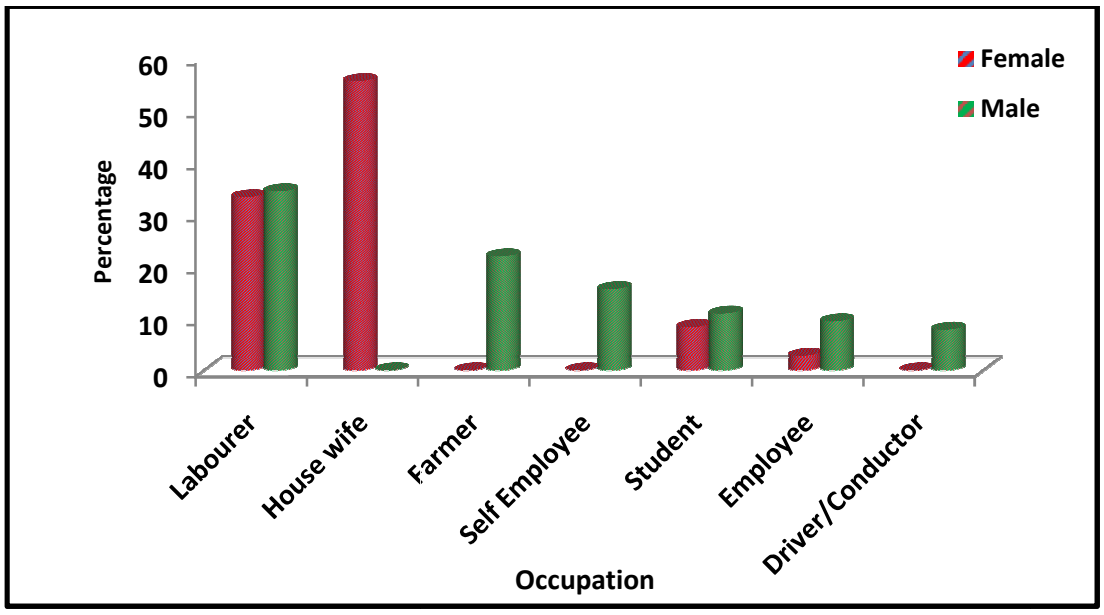

Table 1: distribution of patients according to the site of TB & sex of patients

Type of TB	Gender		Total
	Female	Male	
Pulmonary	26(72.2%)	43(67.2%)	**69(69%)**
Extra pulmonary	08(22.2%)	16(25%)	**24(24%)**
Disseminated	02(5.6%)	05(7.8%)	**07(7%)**
Total	**36(100%)**	**64(100%)**	**100(100%)**
X^2 value = 0.326, p = 0.84			

Table 1 shows the frequency distribution of patients studied according to site of tuberculosis and sex of patients. Majority of the patients among both sexes were having pulmonary tuberculosis followed by extra pulmonary TB and disseminated TB.

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Table 2: distribution of patient's extra pulmonary site

Extra Pulmonary Site	Gender		Total (n=100)
	Female (n=36)	Male (n=64)	
Pleura	03(8.3%)	05(7.8%)	**08(8%)**
Abdominal	02(5.6%)	05(7.8%)	**07(7%)**
Lymph node	02(5.6%)	03(4.7%)	**05(5%)**
Meningitis	01(2.8%)	03(4.7%)	**04(4%)**
Total	**08(22.2%)**	**16(25%)**	**24(24%)**
X^2 value = 0.35, p = 0.94			

Table 2 shows distribution of extra pulmonary TB as per site & sex, according to which majority of the patients had TB at pleura followed by abdomen, lymph node and meninges among both sexes.

Table 3: Age distribution of patients studied in relation to CD4 count

Age in years	CD4 Count			Total
	<50	50-200	>200	
11-20	00(0%)	02(4.9%)	07(13.7%)	**09(9%)**
21-30	02(25.0%)	05(12.2%)	11(21.6%)	**18(18%)**
31-40	03(37.5%)	19(46.3%)	24(47.1%)	**46(46%)**
41-50	02(25.0%)	09(22%)	07(13.7%)	**18(18%)**
51-60	01(12.5%)	06(14.6%)	02(3.9%)	**09(9%)**
Total	**08(100%)**	**41(100%)**	**51(100%)**	**100(100%)**
X^2 value = 8.352, p = 0.399				

According to table 3, majority of the patients studied were having the CD4 count >200 and in the age group of 31-40yrs. according to table 4 majority of the male & female were having CD4 count >200 followed by 50-200. The mean CD4 count in the present study was 246.58 cells/µl. The mean CD4 counts among males were 220.16 cells/µl and 293.08 cells/µl in females.

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Table 4: Gender distribution of patients studied in relation to CD4 count

Gender	CD4 Count			Total
	<50	50-200	>200	
Female	02(25.0%)	13(31.7%)	21(43.1%)	**36(36%)**
Male	06(75.0%)	28(68.3%)	30(56.9%)	**64(64%)**
Total	**08(100%)**	**41(100%)**	**51(100%)**	**100(100%)**
X^2 value = 1.34, p = 0.511				

Table 5: CD4 Count in relation to Type of TB

CD4 Count	Type of TB			Total
	Pulmonary TB	Extra Pulm. TB	Disseminated TB	
<50	04(4.3%)	01(4.2%)	03(42.9%)	**08(8.1%)**
50-200	32(47.8%)	06(25%)	03(42.9%)	**41(41.4%)**
>200	33(47.8%)	17(70.8%)	01(14.3%)	**51(51.5%)**
Total	**69(100%)**	**24(100%)**	**07(100%)**	**100(100%)**
X^2 value = 17.31, p = 0.001				

Table 5 shows distribution of type of tuberculosis in relation to CD4 count among them, according to which significantly more number of patients with extra pulmonary TB were having CD4 count >200 followed by Pulmonary TB.

Discussion:

In this study, out of 100 people studied, 64% of patients were males and 36% females which is comparable to study by Deivanayagam CN[6] et al. (79.25% were males and 20.75% were females) and NACO[7] National Statistics also show 74% males and 26% females. Most of the people were in the 31-40 age groups, with mean age of males being 34.95 years and mean age of females 29.58 years, which is comparable to the study done by Deivanayagam CN et al[6] in which 74.94% of patients belonged to 21-40 years. Present study shows 69% of Pulmonary TB among patients studied, which is almost similar to the studies conducted by Deivanayagam CN et al.[6] (83%), Soumya Swaminathan et al.[8] (72%) and Rajashekharan et al.[9] (55.6%). The mean CD4 count in the present study was 246.58 cells/µl. The mean CD4 counts among males were 220.16 cells/µl and 293.08 cells/µl in females. The mean CD4 count in South Indian study by Soumya et al.[8] is 192 cells/ µl and study by Nashaba Matin et al[10] is 244 cells/µl, Megha Antwal et[11] al is 295 cells / µl and CD4 > 200 cells/ µl is seen in 51% of patients while < 200 in 49% of patients.

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Conclusion:

Most common manifestation of TB in HIV infected is pulmonary TB and also high proportion of extra pulmonary TB was found. With increase in CD4 count the occurrence of Pulmonary TB also increases. So, a high level of 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/µl.

References:

1. Rajasekaran S, Gunasekaran M, Jayakumar DD, Jeyaganesh D, Bhanumathi V. Tuberculous Cervical Lymphadenitis In Hiv Positive And Negative Patients. Ind J Tub 2001;48:201.
2. Beena Susheel, Pai. HIV AND TUBERCULOSIS. Indian J Tuberc 2006; 53:43-46.
3. http://www.cdc.gov/tb/publications/factsheets/general/ltbiandactivetb.htm
4. Centers for Disease Control (CDC) (1981) 'Kaposis Sarcoma and Pneumocystis Pneumonia among Homosexual Men – New York City and California' MMWR Morbidity and Mortality Weekly Report 30(25):305-308.
5. Tripathy S, Menon P, Joshi DR. Preliminary observation on lymphocyte subpopulations in HIV positive and HIV negative tuberculosis patients in Pune, India, Indian J Med Res 2000;111:195.
6. C.N. Deivanayagam, S. Rajasekaran, V.Senthilnathan, 0.R. Krishnarajasekhar, K. Raja, C. Chandrasekar, S. Palanisamy, A. Samuel Dinesh, G. Jothivel and S. V.Elango Clinico-radiological spectrum of tuberculosis among HIV sero-positives – a Tambaram study .Ind. J Tub., 2001,48, 123.
7. National AIDS Control Organization. Ministry of Health and Family welfare, Government of India. HIV/AIDS surveillance in India.
8. Soumya Swaminathan, M. Sangeetha, N. Arunkumar, P.A. Menon, Beena Thomas, K. Shibi ,Ponnuraja and S.Rajasekar.Pulmonary tuberculosis in HIV positive individuals:Preliminary report on clinical features and response to Treatment Ind.J Tub.,2002,49,189.
9. Rajasekaran S, Uma A, Kamakshi S, et al. Trend of HIV infection in patients with tuberculosis in rural south India.Indian J Tuberc 2000; 47:223-26 145. Houston S, Ray S, Mahari M, Neill P, Legg W et al. The association of tuberculosis and HIV infection in Harare.Zimbabwe, Tubercle and Lung Dis 1994; 75: 220.
10. Clinical Profile of HIV/AIDS-infected Patients Admitted to a New Specialist Unit in Dhaka, Bangladesh—A Low-prevalence Country for HIV NashabaMatin, LubabaShahrin, Mohammed Pervez, SaveraBanu, Dilruba Ahmed, Mahmuda ,and Mark Pietroni.
11. Zuber Ahmad, Rakesh Bhargava, D.K Pandey and K. Sharma HIV infection 123 seroprevalence in tuberculosis patients Ind.J.Tub.,2003,50,151.

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