

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/308169838>

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

Article · July 2016

CITATION

1

READS

24

5 authors, including:



[Praveen Ganganahalli](#)

BLDE University

13 PUBLICATIONS 43 CITATIONS

SEE PROFILE

Original article:

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

¹Dr. Ravi Totad, ²Dr. S.L. Lakkannavar , ³Dr. Praveen Ganganahalli, ⁴Dr. Mehboob M. Kalburgi

¹Medical Officer, Govt. HIV hospital, Vijaypur-Karnataka

²Post Graduate student, Department of General Medicine Al-Ameen Medical College Hospital, Vijayapur

³Assistant Professor, Dept. of Community Medicine, BLDEU's Shri B.M Patil Medical College, Vijaypur-Karnataka

⁴Professor, Dept. of General Medicine, Al-Ameen Medical College Hospital Vijayapur-Karnataka

Corresponding author: Dr.Praveen Ganganahalli

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 resurgence¹ 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 infected² 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/ μ l/cu mm are more likely to have typical symptoms, upper lobe disease and sputum smear positive.⁴ Patient who are severely immunosuppressed 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

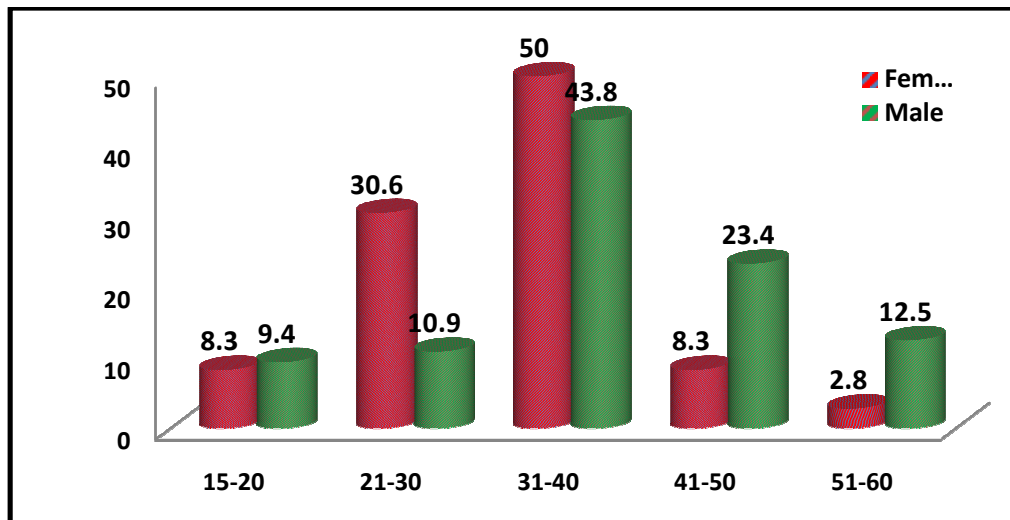


Figure II: percentage distribution of patients according to occupation & sex

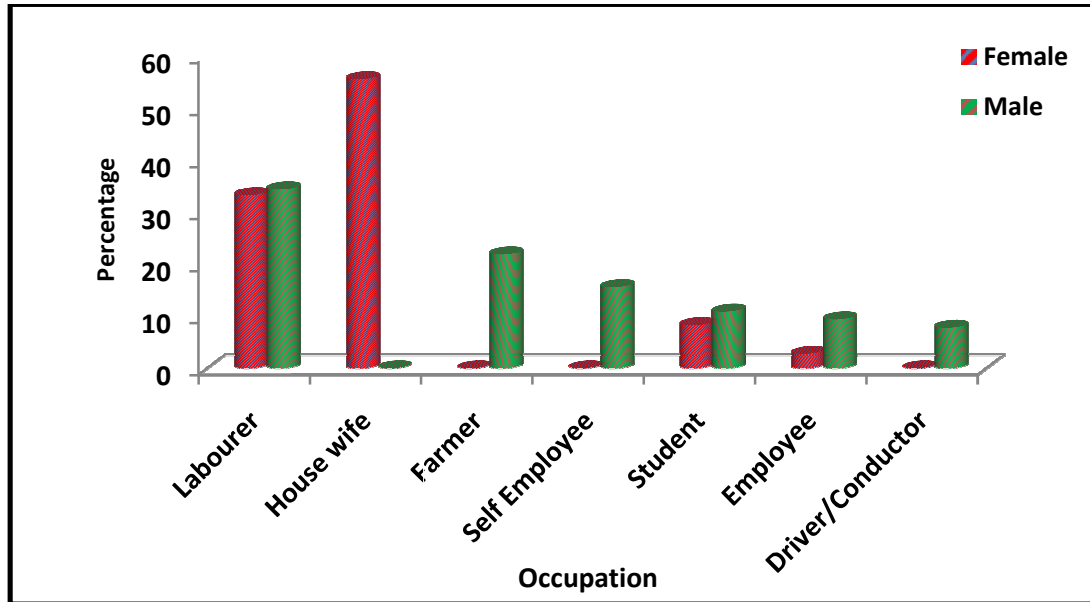


Table 1: distribution of patients according to the site of TB & sex of patients

| 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%) |
| X² 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.

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%) |
| X² 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%) |
| X² 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/ μ l. The mean CD4 counts among males were 220.16 cells/ μ l and 293.08 cells/ μ l in females.

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%) |
| X² 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%) |
| X² 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 CN⁶ et al. (79.25% were males and 20.75% were females) and NACO⁷ 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 al⁶ 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 al¹⁰ is 244 cells/μl, Megha Antwal et¹¹ al is 295 cells / μl and CD4 > 200 cells/ μl is seen in 51% of patients while < 200 in 49% of patients.

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/ μ l.

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) 'Kaposi 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, O.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.