



Prevalence of TB Co-Infection In HIV/AIDS - A Study in Osmania General Hospital

KEYWORDS

Tuberculosis (TB) Human Immunodeficiency Virus (HIV), Acquired Immunodeficiency Syndrome(AIDS), directly observed treatment-short course (DOTS) , Anti retroviral therapy(ART).

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ABSTRACT AIM: The present study aims to assess the prevalence of tuberculosis (TB) in patients of HIV/AIDS attending to ART center during the period of 2011-2015, which is the most common opportunistic infection and curable disease.

METHODOLOGY: The present study was a retrospective hospital based study in patients with HIV/AIDS and tuberculosis co infection, attending ART Centre, Department of Medicine, Osmania General Hospital between 2011 to 2015. Data was collected from hospital records which include clinical profile, complete blood picture, renal and liver function tests, sputum microscopy, mantoux test, culture sensitivity, chest radiography, CD4 cell count, fine needle aspiration and biopsy, magnetic resonance imaging, computed tomography, and colonoscopy.

RESULTS -Total number of HIV/AIDS patients registered at ART center from 2011-2015 were 5,738 .Number of females were n= 2547(44.39%),males were n= 3169 (55.23%),trans gender were n=22(0.383%). Total number of patients on ART were n= 3506(61.1%).Total number of patients who were not on ART (pre-ART) were n=2232(38.9%) . Total number of TB cases detected were n=616(10.73%) [number of males n= 430 , females n= 185, and transgender n=1]. Mean CD4 cell count in males with TB was 196.77cells/cmm3 ,in females with TB n=204.58 /cmm3 and in transgender with TB was n=187/cmm3 (chart1).Out of 1478 HIV/AIDS registered cases in 2011,TB was detected in n=111 patients by the end of 5 years. Among 111 TB cases, in 2011 n=64(4.33 %) patients were detected with TB, in 2012 n= 18(1.22%) patients were TB positive, in 2013 n= 13 (0.88%) were TB positive, in 2014 n=11 (0.74%) were TB positive and in 2015 n=5(0.34%)were found to be TB positive. In 2012, total number of registered patients were n=1368.Of these 162 became TB positive by the end of four years. In 2012, total number of registered patients were n=1368.Of these 162 became TB positive by the end of four years. In 2013, total number of registered patients were n=1256.Of these 175 became TB positive by the end of three years. In 2014, total number of registered patients were n=815.Of these 88 became TB positive by the end of two years. In 2015, total number of registered patients were n=821.Of these 80 became TB positive by the end of one year (Table 2)

CONCLUSION: This study shows prevalence of TB cases attending ART center in patients with HIV/AIDS at Osmania General Hospital is 10.73% .Males are commonly affected. Most of them are becoming TB positive by the end first year and the mean cd4 in males 196.77 cells/mm3 and in females 204.58cells/cmm3.Early initiation of ART will improve the immunological status of the patient thereby reducing opportunistic infections including TB.

INTRODUCTION:

In worldwide, the two infectious diseases, tuberculosis (TB) and human immunodeficiency virus (HIV) disease are the leading causes of mortality¹. When people have both HIV infection and also either latent or active TB disease then it is called TB and HIV co-infection. HIV infection accelerates the progression from latent to active TB, TB bacteria also hastens the progress of HIV infection². Today, tuberculosis has become the most important communicable disease in the world, with over 8 million cases of pulmonary tuberculosis occurring each year, 95% of which are in developing countries^{3,4,5,6}. The World Health Organization (WHO) estimates that the annual number of new cases of tuberculosis will increase to 10 million by 2000 and those deaths attributable to tuberculosis will rise from 2.5 million to 3.5 million by the end of the millennium⁷. Surveys of HIV infection in tuberculosis patients in Zambia⁸, Kenya

and Uganda¹⁰ have shown HIV seropositivity in 27–50% of patients. HIV-associated tuberculosis is no more infectious than non-HIV-associated tuberculosis¹¹. India bears the burden of 2.5 million people infected with HIV. Of these 40% suffer co infection with TB. There is wide variation in HIV seropositivity among TB patients in India ranging from 9.4 to 30%.¹²

MATERIAL AND METHODS:

It was as a retrospective hospital based study. Data of HIV/AIDS infected patients on ART with tuberculosis co-infection attending ART Centre, Department of Medicine, Osmania General Hospital between 2011 to 2015 was collected. . Data includes clinical profile, complete blood picture, renal and liver function tests, sputum microscopy mantoux test ,culture sensitivity, chest radiography, CD4 cell count, fine needle aspiration and biopsy, magnetic resonance im-

aging, computed tomography, and colonoscopy.

RESULTS:

Total number of HIV/AIDS patients registered at ART center from 2011-2015 were 5,738. Number of females were n= 2547 (44.39%), males were n= 3169 (55.23%),trans gender were n=22(0.383%). Total number of patients on ART were n= 3506(61.1%).Total number of patients who were not on ART (pre-ART) were n=2232(38.9%). Total number of TB cases detected were n=616(10.73%) [Number of males n= 430, females n= 185, and transgender n=1]. Mean CD4 cell count in males with TB was 196.77cells/cmm³, in females with TB n=204.58 /cmm³ and in transgender with TB was n=187/cmm³ (Table 1,Figure 1).Out of 1478 HIV/AIDS registered cases in 2011,TB was detected in n=111 patients by the end of 5 years. Among 111 TB cases, in 2011 n=64(4.33 %) patients were detected with TB, in 2012 n= 18(1.22%) patients were TB positive, in 2013 n= 13 (0.88%) were TB positive, in 2014 n=11 (0.74%) were TB positive and in 2015 n=5(0.34%) were found to be TB positive. In 2012, total number of registered patients were n=1368.Of these 162 became TB positive by the end of four years. In 2012, total number of registered patients were n=1368.Of these 162 became TB positive by the end of four years. In 2013, total number of registered patients were n=1256.Of these 175 became TB positive by the end of three years. In 2014, total number of registered patients were n=815.Of these 88 became TB positive by the end of two years. In 2015, total number of registered patients were n=821.Of these 80 became TB positive by the end of one year (Table 2).

DISCUSSION:

In Worldwide, TB is the most common opportunistic infection among individuals with HIV/AIDS and most common cause of death in patients with AIDS.¹³ In HIV-TB co-infection, tuberculosis can be attributed to reactivation of pre-existing tuberculosis infection, or due to new infection or

reinfection^{14, 15, 16}. There is ample evidence that those who are dually infected with tuberculosis and HIV have a 5–10% per annum chance of developing tuberculosis^{17, 18}. Whether the tuberculosis is due to re-infection or reactivation¹⁹ is not relevant since chemoprophylaxis of all such individuals who have greater than 5 mm induration to 5 TU has been shown to be effective in preventing the development of tuberculosis disease²⁰, and is now recommended by the International Union Against Tuberculosis and Lung Disease²¹. The presentation of TB is affected by the extent of HIV related immunosuppression. In patients with CD4 count of greater than 350 cell/mm³,the clinical and radiographic presentation is similar to that of patients without HIV infection. Low CD4 cell counts are associated with an increased frequency of extra pulmonary TB ,positive mycobacterial blood cultures and atypical chest radiographic findings reflecting immuno suppression. Clinical features will depend on the state of immunosuppression in HIV infected individuals²². Risk of reactivation of TB is 10% per annum, latent tuberculosis is 50% (lifetime)and disease recurrence after treatment is 14%. Antituberculosis therapy (ATT) must be administered according to the directly observed treatment-short course (DOTS) regimen. Institution of HAART is recommended 10-14 days after institution of ATT in patients with CD4 counts less than 200 cells/ mm³. In patients with CD4 counts over 200 cells/mm³, HAART may be commenced 2-8 weeks after the institution of ATT. As rifampicin is known to enhance the metabolism of protease inhibitors and nevirapine, efavirenz based antiretroviral therapy (ART) is recommended while patients are on rifampin²³

WHO recommends that HIV/AIDS programmes provide isoniazid preventative therapy as part of the package of care for people living with HIV/AIDS after exclusion of active tuberculosis. The recommended regimen is isoniazid 5 mg/kg up to a maximum of 300 mg daily for 6–9 months, during which time patients should be clinically monitored for toxicity and for active tuberculosis²⁴

Table 1: PREVALENCE OF TB CO-INFECTION IN HIV/AIDS F-Female;M-Male;T-Transgender

Year	Total Registered	F	%	M	%	T	%	ART	ART %	PRE	PRE %	M	F	T	Total	TB %	MEAN CD4 TB FE-MALE	MEAN CD4 TB M ALE	MEAN CD4 TB TRANS GEN
2011	1478	634	42.9	844	57.1	0	-	861	58.25	617	41.75	78	33	0	111	7.51	220.42	162.63	-
2012	1368	611	44.66	752	54.97	5	0.37	846	61.84	522	38.16	105	57	0	162	11.84	222.01	221.21	187
2013	1256	557	44.35	691	55.02	8	0.64	767	61.07	489	38.93	118	57	0	175	13.93	181.41	193.54	-
2014	815	384	47.12	425	52.15	6	0.74	532	65.28	283	34.72	67	21	0	88	10.8	171.61	201.39	-
2015	821	361	43.97	457	55.66	3	0.37	500	60.9	321	39.1	62	17	1	80	9.74	227.47	205.11	-
Grand Total	5738	2547	44.39	3169	55.23	22	0.38	3506	61.1	2232	38.9	430	185	1	616	10.74	204.58	196.77	187

Figure 1 :GRAPHICAL REPRESENTATION PREVALENCE OF TB CO-INFECTION IN HIV/AIDS

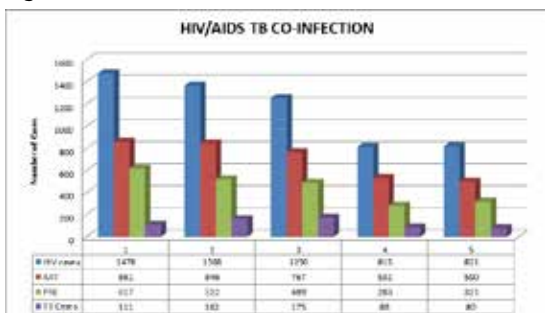


Table 2: TB Positivity Yearwise in Male(M) + Female(F) + Transgender(T) patients.

HIV REG Year	No of HIV Cases Registered	TB Positivity Yearwise in Male(M) + Female(F) + Transgender(T)										Total TB over 5 Years									
		2011			2012			2013			2014			2015			M	F	T	Total	TB %
		M F	+	%	M F	+	%	M +	F	%	M F	+	%	M +	F T	%					
2011	1478	64		4.3	18		1.22	13		0.88	11		0.74	5		0.34	78	33	0	111	7.51
2012	1368				122		8.92	18		1.32	14		1.02	8		0.58	105	57	0	162	11.84
2013	1256							159		12.66	11		0.88	5		0.40	118	57	0	175	13.93
2014	815										74		9.08	14		1.72	67	21	0	88	10.80
2015	821													80		9.74	62	17	1	80	9.74
Grand Total	5738	64		4.3	140		10	190		14.9	110		12	112		13	430	185	1	616	53.8

CONCLUSION:

The present study shows prevalence of TB cases attending ART center, Osmania General Hospital is 10.73%. Males are commonly affected. Most of them are becoming TB positive by the end of first year and the mean cd4 in males 196.77 cells/mm³ and in females 204.58cells/cmm³. Early initiation of ART will improve the immunological status of the patient thereby reducing opportunistic infections including TB.

ACKNOWLEDGEMENT:

My sincere thanks to ART staff especially late. Dr. Sanjeev Kumar, ART Medical officer and Ashok. D, Data Manager for their continuous cooperation and patient care.

CONFLICTS OF INTERESTS: Nil

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