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TREATMENT OUTCOME OF TUBERCULOSIS IN HIV SEROPOSITIVE PATIENTS: AN EXPERIENCE OF SOUTHEAST REGION OF AHMEDABAD

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ABSTRACT

Objectives: To evaluate the clinical profile and the factors influencing treatment outcome of TB patients co-infected with HIV attending DOT centers of Southeast area of Ahmedabad, Gujarat

Methodology: A Prospective observation study was conducted to assess the treatment outcome of TB in TB-HIV co-infected patients on DOTs conducted at L.G. Hospital and tuberculosis units (TUs) of south and east region of Ahmedabad. TB patients started DOTS were registered and were followed till treatment outcome was declared.

Results: The treatment success rate was found to be 84.17% (101 of 120 patients). Treatment success rate of Tuberculosis among HIV seropositive patients was significantly associated with WHO clinical and Functional staging (p value <0.001), alcoholism (p value <0.001) and drug intolerance (p value <0.001).No significant association was found with concurrent Anti Retro Viral Therapy and socio economic classes.

Conclusion: The DOTS was found to be as effective in HIV seropositive, so it should be strengthened, in order to control the HIV-TB epidemic.

Key words: TB, HIV, DOTs, RNTCP, CD4

INTRODUCTION

Tuberculosis (TB) and HIV have been closely linked since the emergence of AIDS. Worldwide, TB is the most common opportunistic infection affecting HIV-seropositive individuals,[1] and it remains the most common cause of death in patients with AIDS.[2] HIV infection has contributed to a significant increase in the worldwide incidence of TB.[1,3] By producing a progressive decline in cell-mediated immunity, HIV alters the pathogenesis of TB, greatly increasing the risk of disease from TB in HIV-co infected individuals and leading to more frequent extra pulmonary involvement, atypical radiographic manifestations, and paucibacillary disease, which can impede timely diagnosis. Although HIV-related TB is both treatable and preventable, incidence continues to climb in developing nations wherein HIV infection and TB are endemic and resources are limited [1]. Interactions between HIV and TB medications, overlapping medication toxicities, and immune reconstitution inflammatory syndrome (IRIS) complicate the co treatment of HIV and TB

DOTS (Directly Observed Treatment, Short course) is the accepted as standard treatment even for HIV positive TB patients [4, 5]. With increase in HIV infec-

tion, health services struggle to deal with the large and rising number of TB patients with consequences like low treatment success rate and high mortality. The present study was conducted to assess the treatment outcome of TB in TB-HIV co-infected patients on DOTS.

MATERIALS AND METHOD

This prospective study was conducted at our institute from Jan 2012 to Dec 2013. During this study period total 120 patients were found to have HIV TB co-infection seeking DOTS treatment. Patients were explained and informed consent was obtained.

During the first visit data of demographic profile, socioeconomic status (Kuppuswamy Scale), past history of TB and any kind of adverse drug reaction was collected. Basic CD4 count was done at the time of diagnosis. WHO clinical and functional staging [6] was done and history of Anti-Retroviral treatment (ART) was also collected. Follow up was done for 6-9 months, till the outcome of treatment was declared. Three follow up were scheduled preferably at the time of scheduled sputum examination and clinical examination (for improvement or deterioration of condition), weigh gain and sputum examination were evaluated.

During each follow-up patient and relative were educated for regularity in treatment, importance of completion of treatment, proper disposal of sputum, nutrition and DOTS therapy. Patients were advised to attend our centre if they have any kind of problem.

RESULT

In this study maximum (66.67%) patients were in 31-50 years age group (Range: 23-65 Years). Maximum TB-HIV infected patients were male (Male to female ratio ~ 3:1), married (61.67%), and belonged to Low Socioeconomic Class (Kuppuswamy Scale-Lower and upper lower classes-70.34%) (Table- 1).

The common symptoms of tuberculosis disease were Fever (81.67%), Cough (84.17%) and weight loss (87.50%). By eliciting H/o Fever and cough for a duration of >2 weeks, most of tuberculosis suspects can be identified. While triad of Fever, cough and weight loss was present in 55% cases.

On general examination, lymphadenopathy was found in 21.67%, abdominal pain in 25% and 50% of patients were anaemic.

Out of 120 TB –HIV co infected patients, 48 (40%) had past history of Tuberculosis (Category two) and 72 (60%) were new cases. Pre treatment sputum smear microscopy was positive in only in 25% cases.

Table:1 Demographic profile of TB-HIV co infected patients (n= 120)

Variable	Patients (%)
Age	
21-30 years	23 (19.17%)
31-40 years	50 (41.67%)
41-50ears	30 (25%)
51-60 years	13 (10.83%)
>60 years	4 (3.33%)
Sex Distribution	
Male	92 (76.67%)
Female	28 (23.33%)
Marital status	
Married	74 (61.67%)
Unmarried	36 (30%)
Widow/Widower	10 (8.33%)
Socio-economic status	
Upper Middle	38 (31.66%)
Lower Middle	34 (28.33%)
Upper Lower	33 (27.50%)
Lower	15 (12.50 %)

* Kuppuswamy classification

Table 2: Clinical profile of TB-HIV co infected cases.

Symptoms/Signs	HIV +ve Cases (%)
Fever	98 (81.67)
Cough	101 (84.17)
Weight loss	105 (87.50)
Triad of Cough > 2 weeks, fever & weight loss	66 (55)
Abdominal pain	30 (25)
Lymphadenopathy	26 (21.67)
Pallor	60 (50)
Abnormal Respiratory Findings	36 (30)

Table 3: Diseases Characteristics among the study participants

Diseases Characteristics	Frequency (%)
Type of Disease	
Pulmonary	53 (44.17)
Extrapulmonary	55 (45.83)
Pulmonary + Extrapulmonary	12 (10)
Treatment Category	
One	72 (60)
Two	48 (40)
Sputum smear	
Positive	30 (25)
Negative	90 (75)
Type of case	
New	72 (60)
Relapse	14 (11.67)
TAD (Treatment After Default)	19 (15.83)
Other	13 (10.83)
Failure	02 (1.67)

Table 4: Effect of various factors on treatment outcome

Factors	Cured & Treatment Completed (N=101)	Failure, Transferred out, Died (N= 19)	Total	'P' value
Alcoholism				
Yes	15 (46.87)	17(53.13)	32	<0.0001
No	86 (97.73)	2 (2.27)	88	
Socio-economic class				
Upper Middle	34 (89.47)	4 (10.55)	38	>0.05 (0.19)
Lower Middle	30 (88.24)	4 (11.76)	34	
Upper Lower	27 (81.82)	6 (18.18)	33	
Lower	10 (66.67)	5 (33.33)	15	
Drug (ATT) intolerance				
Yes	13 (41.94)	18 (58.06)	31	<0.0001
No	88 (98.88)	1 (1.12)	89	
CD4 count / microL3				
<200	46 (77.97)	13 (22.03)	59	>0.05 (0.06)
200-350	35 (85.37)	6 (14.63)	41	
>350	20 (100)	0 (0.00)	20	
ART				
Yes	62 (82.67)	13 (17.23)	75	>0.05 (0.74)
No	39 (86.67)	6 (13.33)	45	
WHO clinical staging				
1	38(100)	0 (0.00)	38	<0.001
2	25 (92.59)	2 (7.41)	27	
3	20 (74.07)	7 (25.93)	27	
4	18 (64.29)	10 (35.71)	28	
Functional stages				
Working	84 (94.38)	5 (5.62)	89	<0.0001
Ambulatory	17 (54.84)	14 (45.16)	31	

Among TB-HIV co infected patients, extra pulmonary tuberculosis (EPTB) was the predominant type of Tuberculosis (55.83%), the commonest site being peripheral Lymph nodes (31 out of 67 cases,46.27%) followed by Abdominal tuberculosis (24 out of 67, 35.82%) and Pleural effusion (12 out of 67,17.14%).

During treatment course, the commonest adverse reactions experienced by patients were Nausea and Vomiting (60%). A few patients experienced Rashes (5%), Joint pain (7.5%), Jaundice (6.67%), hyper pigmentation (2.50%) and thrombocytopenia (1.67).

Treatment Outcome: In the study group 101(84.17%) patients had the desired treatment outcome (Either cured or treatment completed). Of the remaining 19 patients 5 (4.17%) were treatment failure and 9(7.5%) were transferred out and 5 (4.17%) died during the treatment. Treatment success rate of Tuberculosis among HIV seropositive patients was significantly associated with WHO clinical and Functional staging (p value <0.001), alcoholism (p value <0.001) and drug intolerance (p value <0.001). Higher treatment success rate was seen among patients with CD4 count >200/ µL3 at the time of diagnosis, WHO clinical stage 1 and 2, and among working patients than ambulatory. No significant association was found with concurrent Anti Retro Viral Therapy and socio economic classes.

DISCUSSION

In this study the age group 21-40 years was mainly affected, with male predominance. This finding was also observed by Tripathy S et al, 2011 [7] and Vijay S et al 2011[8]. Majority of TB-HIV co infected patients were from low socioeconomic status, this is in accordance to a study done in South India on risk factors for TB by Shetty et al 2006 [9], which also observed that Tuberculosis most commonly affects lower socioeconomic class population (Low income and low education).

In this study weight loss was the commonest presenting symptom (87.50) followed by cough (84.17) and fever (81.67).This is in contrast to several studies where fever was the main presenting symptom. There was no significant difference between pulmonary (44.17) and extra pulmonary (45.83) involvement though there was slight extra pulmonary predominance .In 10% of patients there were both pulmonary and extra pulmonary involvement. Studies done in past had shown 30 to 50% prevalence of extra pulmonary TB among HIV infected individuals. Ahemad Z et al 2005 [10], Kumar P et al 2002 [11] and Gupta P et al 2006 [12] found prevalence of EPTB in HIV infected patients 45.3%, 38.46% and 35.71% respectively. Peripheral lymph node involvement (31 out of 67, 46.27%) was the most frequent extra pulmonary involvement followed by

abdominal kochs (24 out of 67, 35.82%) followed by pleural effusion (12 out of 67, 17.41%). In present study commonest site for lymph node involvement was cervical lymph node. There is evidence that shows increased involvement of Extra Pulmonary sites in TB-HIV co infected individuals in more than half cases. Patel et al (2011) [13] reported 60 % cases of extra pulmonary tuberculosis.

Positive sputum smear were seen only in 25% of patients. This is in accordance to studies done by Kumar P et al 2002 [11], Ahemad Z et al 2005 [10], Gupta P et al 2006 [12] Rajasekaran et al 2007 [14] and Patel, et al 2011[13] have shown positive sputum smear results in 20-40%.75 out of 120 patients (62.5%) were on antiretroviral therapy (ART) and in 59 (49.17%) CD4 count was less than 200/ μL^3. This is in accordance with study conducted by Gill N et al. [15]

In our study 88 patients out of 120 patients experienced one or other adverse effects. However incidence was higher in those who were on Anti Retroviral Therapy (ART) than on Anti Kochs Treatment (AKT) alone. This is because of overlapping spectrum of adverse reaction of ART and AKT.

In present study treatment success rate (treatment completed and cured) was 84.17%. 3 cases were treatment failure (2.91%), while there was no defaulter during the treatment. Failure rate of 4.17% was slightly higher than the RNTCP norm of <4% of patients put under DOTS. 5 patients died during the treatment, death rate of 4.17% is higher than RNTCP norm of < 2% death rate. Treatment success rate was slightly higher in our study when compared to other studies done by Vijay S et al 2011 [8], Chennaveerappa PK et al [16] and Tripathy S et al 2011[7], which showed 66-83% treatment success rate.

TB is a disease of poverty and commonly affects the lower socio economic classes but its treatment outcome does not differ significantly amongst various socio economic classes. This may be because of freely availability of DOTS therapy. The treatment outcome of HIV seropositive TB was significantly associated with CD4 counts, which was reflected by advanced clinical stage and poorer functional stage (ambulatory and bedridden). The association of CD4 count and treatment outcome was also shown in various studies. Chideya S et al 2009 [17] reported that HIV-infected patients with a CD4 cell count <200 cells/µL3 had a higher risk of poor treatment outcome (27%) than did HIV-uninfected patients (11%) or HIV-infected patients with a CD4 cell count > 200 cells/µL3 (P=0.01).

Overall, DOTS is found to be as effective in HIV seropositive, so it should be strengthened, in order to control the HIV-TB epidemic.

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