Original Article

Outcome of Early Initiation of ART among HIV Positive Patients with Symptomatic Pulmonary Tuberculosis

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ABSTRACT

Aim: In India, free antiretroviral therapy (ART) has been started since 2005. Although the rapid expansion of ART services at both hospital and health centres in most parts of the country over the last five years has greatly increased, there are still the coverage of ART was 53% of those in need in 2009. Aims and Objectives: To assess the outcome of HIV + ve patients after early detection of PTB and treatment in symptomatic individual.

Materials and Methods: A longitudinal follow up study was used to assess the outcome of HIV positive patients at the ART centre after early detection of PTB and its treatment. In this study HIV positive patients with signs and symptoms of PTB were followed for the duration of 6 months till the completion of Anti Tuberculosis Treatment. Patient's initiation of ART was considered as an exposure and result of TB was considered as the outcome variable. A total of 50 HIV positive patients with symptoms consistent with PTB were included in the study.

Results: Among the subjects 24% were started ART after 2 months that is delayed initiation whereas the remaining 76% were received in an early period that is about 2 weeks from the registration. Majority of the study group were males and in the age group of less than 40 years of age, It was observed that there is small difference between the death rate in each group 13.2% and 16.7% in early and delayed group respectively, but the difference was not proved statistically. It was found that there is significant mean difference of increased CD4 count between groups. Regarding outcome, death rate was about 14% and the TB cure rate is 86%. IRIS was reported in about 4%. The cause of death were identified as IRIS-2, CAD-2, RTA-1 and Cerebral haemorraghe-2.

Conclusion: The risk of death was found to be more for delayed group when compared with the early initiated group and further studies are needed to support the same.

Keywords: HIV-pulmonary tuberculosis, antiretroviral therapy, outcome.

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INTRODUCTION

Pulmonary Tuberculosis (PTB) is an infectious disease caused by the bacteria Mycobacterium Tuberculosis. TB is a major disease burden globally. The HIV prevalence in TB patients is less than 1% in the Western Pacific but 22% in Africa, however, in countries with the highest HIV prevalence; more than 75% of cases of TB are HIV-associated[1]. The burden of HIV associated TB continued as the major public health problem in the world. Globally almost one third of HIV infected patients have TB infection concomitantly [2].

Although the availability of antiretroviral therapy (ART) has transformed human immunodeficiency virus (HIV) infection into a chronic and manageable disease in those who are able to access treatment, the successes recorded can easily be destroyed by the high burden of tuberculosis (TB) co-infection in the HIV-infected individual. Even after the initiation of ART, the incidence of HIV related TB remains unacceptably high [1, 2].

According to WHO, 2009 report, from 9.27 million incident cases of tuberculosis, about 1.37 million (14.8%) was attributed by HIV infection in 2007 worldwide. Majority of these cases are accounted by African region

where 79% HIV positive TB incident cases occurred in 2007. Moreover tuberculosis is the commonest opportunistic infection and number one causes of death in HIV infected patients in the developing countries. Since the clinical presentation of tuberculosis is deviated somewhat from that was known in Pre-HIV and ART era. Moreover TB and HIV co-infection are associated with special diagnostic and therapeutic challenges and constitute an enormous burden on healthcare systems of heavily infected countries like India.

Antiretroviral therapy (ART) is the single most important way to reduce the incidence of TB in people living with HIV. However, people with HIV on ART remain highly vulnerable to TB. The emergence of drug resistant TB in countries with a high HIV prevalence poses an additional public health threat, not only to people with HIV but also to the broader community [5]. In India, free antiretroviral therapy (ART) has been started since 2005. Although the rapid expansion of ART services at both hospital and health centers in most parts of the country over the last five years has greatly increased, there are still the coverage of ART was 53% of those in need in 2009 [3,4].

Aims and Objectives: To assess the outcome of HIV+ve patients after early detection of PTB and treatment in symptomatic individual.

MATERIALS AND METHODS

Study Setting: A longitudinal follow up study was conducted from January, 2012 in ART centerGodhavarikani, which renders service to HIV positive patients in and around Godavarikani.

Study Design: A longitudinal follow up study was used to assess the outcome of HIV positive patients at the ART centre after early detection of PTB and its treatment. In this study HIV positive patients with signs and symptoms of PTB were followed for the duration of 6 months till the completion of Anti Tuberculosis Treatment. Patient's initiation of ART was considered as an exposure and result of TB was considered as the outcome variable.

Inclusion Criteria

All HIV positive patients symptomatic with chronic cough and constitutional symptom of Pulmonary Tuberculosis and age 15 years or above were included in the study.

Exclusion Criteria

All HIV positive patients already on ATT, HIV + patients with other opportunistic infection, those who do not have regular follow up history / lost to follow up more than 3 months and all ANC HIV positive cases.

Ethical Considerations

A written consent was obtained from the all study participants and the high confidentiality was maintained. Informed consent was obtained from patients who were access in the period of data collection.

DATA COLLECTION TOOLS AND PROCEDURES

All relevant data were collected during patient's follow up register and other clinical records. A total of 50 HIV positive patients with symptoms consistent with PTB were included in the study. Detailed history of patient like age, sex, complaint, date of ATT initiation, Date of HAART initiation, base line CD4 count, treatment regimen(HAART) and any other past Opportunistic Infections were obtained. All the subjects were screened for PTB by bio chemical and radiological tests like sputum for AFB chest X-ray as laid down in protocol of RNTCP for early detection of PTB cases. Positive PTB cases will be referred to nearest DOT center for registration and starting of DOT regimen. Baseline CD4 count at registration and after 6 months of ATT will be obtained.

RESULTS AND DISCUSSION

According to our study findings, majority of study subjects were in the age group of less than 40 years(74%) and 60 % of study subjects were male. Different studies revealed that active TB is most common in HIV positive patients between 25 to 44 years of age. These demographic groups contribute about 20 to 70% of the new cases of active TB in all patients with HIV infection (2). The baseline CD4 count was less than 100 for about 24% and 60 % of study subjects sputum were negative for AFB .Among the subjects 24% were started ART after 2 months that is delayed initiation whereas the remaining 76% were received in an early period that is about 2 weeks from the registration.

The table 2 describes the distribution of study subject according to their baseline CD4 count with the outcome. It shows baseline CD4 count is distributed equally in both the outcome group and the difference between the group is also not significant statistically. This may be due to small sample size, non randomized sampling technique, study setting etc.

The table 3, describes the distribution of study subjects according to their HAARt initiation status with the outcome. It was observed that there is small difference between the death rate in each group 13.2% and 16.7% in early and delayed group respectively, but the difference was not proved statistically. The risk of death was found to be 1.32 times more for delayed group when compared with the other (OR 1.32, 95% CI 0.2 to 7.8). Different

studies clearly showed that ART significantly decreases HIV / AIDS related mortality rate, which means mortality rate low in ART receiving patients [2, 6].

The table 4, explains the increased CD4 count with Art initiation status, it shows that there is significant difference in the mean increased CD4 count between the two groups.

Regarding outcome, death rate was about 14% and the TB cure rate is 86%. IRIS was reported in about 4%. The cause of death were identified as IRIS-2, CAD-2, RTA-1 and Cerebral haemorraghe-2.

Table 1: Distribution of study subjects according to HAART initiation status:

Art initiation	Frequency	Percentage
Early HAART	38	76.0
Delayed	12	24.0
Total	50	100.0

Table 2: Distribution of study subjects according to their baseline CD4 count with their outcome

Baseline CD4	Status		Total(%)
	Death(%)	Alive(%)	
<100	2(28.6)	10(23.2)	12(24)
100-200	3(42.9)	22(51.2)	25(50)
>200	2(28.5)	11(25.6)	13(26)
Total	7(100)	43(100)	50(100)

Chi square value 0.175 and the p value 0.916 (not significant).

Table 3: Distribution of study subjects according to their ART initiation status with the outcome:

ART Initiation	Status		Total
	Death (%)	Alive (%)	
Delayed	2(16.7)	10(83.3)	12(100)
Early HAART	5(13.2)	33(86.8)	38(100)
Total	7(14)	43(86)	50(100)

Chi square value 0.093 and the p value 0.760 (not significant) OR 1.32, 95% CI 0.2 to 7.8

CONCLUSION

Active TB often develops relatively early in the course of HIV infection and may be an early clinical sign of HIV disease. In one study, the median CD4+ cell count at presentation of TB was 326cells / μL[2] . But in this study it was difficult to get the exact value of CD4 at diagnosis of TB because it was not recorded. However, it was tried to look the baseline CD4 count of patients who had TB and after the end of ATT treatment in the course of their follow up. However when further stratified by ART status, the early initiated ART cohort had low baseline CD4 count than delayed ART with the median CD4 count 60 cells / μl and 163 cells / μl respectively. Similarly the patients in delayed group were relatively in good clinical and immunological condition at registration than early group at initiation of ARV, there were relatively less death cases in delayed group than in early ART initiation group (2 in delayed-ART Vs 5 in early-ART) with death rate of 13.2% and 16.7% in early and delayed groups respectively with no significant difference statistically. The finding is similar to that reported in two studies from Ethiopia and South Africa.[1,6]

Table 4: Distribution of study subjects according to their increased CD4 count with the initiation of ART status:

Group	N	Mean	SD	t value
Delayed	10	41.27	10.81	5.14,
Early	33	21.50	10.04	pvalue-<0.0001

Table 5: Outcome

Outcome	Frequency	percentage
Death rate	7/50	14
TB cure	43/50	86
Side effects	03/50	6
IRIS	2/50	4

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