



HIV TB CO INFECTION MORTALITY BEFORE THE UNIVERSAL ART ERA IN HIGH TUBERCULOSIS BURDEN COUNTRY

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ABSTRACT

INTRODUCTION: Tuberculosis & HIV were the leading causes of morbidity and mortality among infectious diseases in the world. Past HIV TB co infection mortality analysis will help us to understand situations like covid pandemic. Late HIV presentation was big problem in pre universal scale up of ART era. hence a look at the past scenario can bring us sufficient knowledge.

METHOD: Retrospective analysis of data of 309 patients from HIV TB registry and case sheets from a tertiary care center in 2016. Study period 1 year

RESULTS: Totally 309 cases of HIV TB co infected were included in the study. Two hundred and thirteen males (M=213) and ninety-six females were affected(F=96).

Death at the start of the ART was 110. Patients alive at the end of one year 209.

Among 110 patients 80 died of pulmonary and 30 died of extra pulmonary tuberculosis. 52 % of extra pulmonary TB died, 28 % while of pulmonary had died.

The CD4 of patient is an important factor in development of opportunistic infection, tuberculosis being the commonest infection and causing higher mortality.

Various CD4 of patient in the study and their outcome. <100 total is 73 death = 40 (54.3%). 100-200 CD4 is 85 with 33 death (38.5%). CD4 of 200-350 is 73 with 20 death (27%). CD4 of 351 -500 is 42 with 4 death (9.5%).

CONCLUSION: To conclude in TB HIV coinfection late presentation with low CD4 can arise in pandemic Strengthening of counselling about the nature of the disease is essential.

KEYWORDS :

AIM AND INTRODUCTION:

Tuberculosis is a single leading cause of morbidity and mortality among infectious diseases in the world.¹ Equally lethal is HIV which was the leading infectious cause of death till 2007.²

The current scenario of HIV TB death has improved in 2020 but in the pre universal ART ERA it was abysmal. Lesson learned from the past should be applied in scenarios like it. Since pandemic has put an extra burden on health care providers due to repeated lockdown and restricted access by patients.

Hence analysis of data from HIV TB co infection from the past is essential especially in high burden countries. late HIV presentation was big problem in pre universal ART era at present pandemic situation access to health care is a big challenge for underprivileged people. hence a look at the past scenario can bring us sufficient knowledge.

M. tuberculosis infects one third of the world's population, with 8.7 million new cases reported each year.³

The strongest risk factor for progression to active tuberculosis is acquired immunodeficiency syndrome (AIDS).⁴

Latent tuberculosis is big challenge in developed world in HIV as well as non-HIV, but late HIV is still prevalent in developing world.

METHODS:

Retrospective analysis of data from HIV TB registry and case sheets from a tertiary care center in 2016. Demographic analysis of death, nature of Tuberculosis infection, immune status of the patient was analyzed. Categorical variables were analyzed with chi square test and fisher exact test. Multivariate logistic regression analysis used for finding significant factors affecting mortality in HIV TB co infected patients, SPSS version 22 used. Study period 1 year

INCLUSION CRITERIA: All cases diagnosed of HIV with TB co

infection (pulmonary and extra pulmonary TB) who visited the ART center during the year 2014.

Definition: late HIV- HIV patients presenting with CD4 of less than or equal to 350, patient with stage 4 disease irrespective of Cd4.

RESULTS AND DISCUSSION:

Totally 309 cases of HIV TB co infected were included in the study. Two hundred and thirteen males (M=213) and ninety-six females were affected(F=96). (table 1)

Death at the start of the ART was 110. Patients alive at the end of one year 209.

Table 1: TOTAL FEMALES =96.

Disease	Male	Female
HIV TB coinfection	213	96

TOTAL NO OF MALES = 213.

Table 2:

Disease	Death at the start of ART	Alive at the end of six months
HIV TB	110	198

Chart 1:

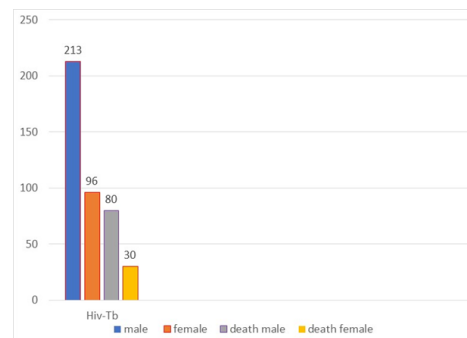


Table 3:

Disease	Mortality		Total
	At the start of ART death	Alive after 6 months	
Tuberculosis			
pulmonary	80	166	246
Extrapulmonary	30	33	63
Total	110	199	309

The results of death of 110 patients showed eighty patients died of pulmonary and thirty patients died of extra pulmonary tuberculosis. 52 percent of extra pulmonary TB died. while 28% of pulmonary had died.

TABLE 4: Chi square test and significance of difference in mortality of pulmonary and extra pulmonary

Pearson chi square	0.026
Fisher exact test	0.028

The difference in mortality between extra pulmonary and pulmonary tuberculosis in HIV patient was significant in both Pearson and Fisher exact chi-square test. it was 0.026 and 0.028, respectively. (table 4).

The CD4 of patient is an important factor in development of opportunistic infection, tuberculosis being the commonest infection and causing higher mortality.

Various CD4 of patient in the study and their outcome. Less than 100 (<100) totals are 73 death among them is 40 (54.3%). 100-200 CD4 is 85 with 33 death (38.5%). CD4 of 200-350 is 73 with 20 deaths (27%). CD4 of 351 -500 is 42 with 4 deaths (9.5%). TABLE 5.

Logistic regression analysis showed significant odds for mortality in HIV patients with extra pulmonary tuberculosis and for pulmonary tuberculosis with odds of 2.5 with C.I of 1.258-4.229.

CD4 of less 200 is a significant risk factor for mortality.

Late HIV presentation is also a risk factor for mortality. TABLE 7.

Table 5:

CD 4 COUNT	MORTALITY STATUS		TOTAL
	DEATH AT THE START OF ART	ALIVE AFTER 6 MONTHS	
<100	40	33	73
101-200	33	52	85
201-300	20	53	73
301-500	12	23	35
>500	4	38	42

TABLE 6:

Various stage of disease	Frequency	
CD 4 COUNT	< 100	73
	100-200	83
	201-350	73
	351-500	35
	>500	42
Early VS LATE HIV	Early	86
	LATE	222
SEX	Male	212
	FEMALE	96

Table 7: BINARY LOGISTIC REGRESSION.

Step1 variable	Significance	Odds ratio	CI
Sex	0.3	0.5	0.02-0.724
Tuberculosis	0.007	2.3	1.258-4.229
CD4 group	0.002	1.8	1.122-3.221
Late HIV	0.05	2.1	1.456-3.1

To conclude in TB HIV coinfection late presentation with low CD4 is an important factor determining death.

Factors associated with late presentation may be lack of awareness about the nature of the disease. Lack of knowledge about the fatality of the disease.

Strengthening of counselling about the nature of the disease is essential.

Both Physician and Counsellor should be prime counsellors.

Presence of extra pulmonary tuberculosis in HIV is also bad prognostic factor.

Tuberculosis infection in HIV is fatal especially in late HIV causes increased mortality.

Recommendation:

Opportunistic infection in Late HIV should be vigorously pursued and treated.

Increase the knowledge of HIV and TB co infection among affected patients.

Extra pulmonary tuberculosis in HIV should treated aggressively.

Clinical staging of the disease is especially important.

Limitation of the study:

The study is a retrospective one which relied on the diagnosis made by the treating physician in the HIV clinic or ward.

Occult opportunistic infection could be confounder in the study.

Viral load was not measured in all cases.

“CONFLICT OF INTEREST: NONE”.

Funding: None.

Ethical clearance: Not required (retrospective cohort study)

REFERENCES:

1. WHO GLOBAL TB REPORT 2020 PAGE 23.
2. WHO GLOBAL TB REPORT 2020 PAGE 23.
3. Daniel W. Fitzgerald, Timothy R. Sterling, and David W. Haas, essentials of infectious diseases page 365.
4. Mandell, Douglas, and Bennet essential of infectious disease page 365.