

## Tuberculosis in HIV Patient

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### ABSTRACT

**Introduction:** Strict monitoring of anti tuberculosis therapy and antiretroviral therapy is crucial for proper management of TB/HIV co-infected patients.

**Methods:** Between December 2006 and December 2008 a prospective observational study was conducted among 135 TB/HIV co-infected patients visiting antiretroviral therapy in Seti Zonal Hospital, Dhangadi. The diagnosed TB patients were subjected to ATT through directly observed treatment short-course (DOTS) and its response was evaluated as per WHO guidelines.

**Results:** Among 135 studied subjects, 97 (71.9%) were males and over 119 (88 %) of the patients were in the age group 21 to 50. Of the total TB cases 92 (68.1%) presented pulmonary TB and 37.20% of the Extra-pulmonary Tuberculosis cases were lymph node TB. 72 (53.33%) of them had completed ATT, 11 (8.2%) transfer out and 17 (12.6%) were default.

**Conclusions:** Majority of the patients presented PTB, and lymph node TB was found to be the most common EPTB. Comparatively, high efficacy of ATT was found in HIV patients visiting this resource poor setting.

**Keywords:** antiretroviral therapy; anti TB therapy; Dhangadi; lymph node T; treatment response.

### INTRODUCTION

Human immune deficiency virus (HIV) infection continues to have destructive impact on TB epidemiology worldwide with Tuberculosis (TB) being the most common opportunistic infection associated HIV contributing to one third of Acquired immunodeficiency syndrome (AIDS) death globally and 40% of AIDS mortality with in Asia.<sup>1</sup> HIV infection is the strongest known risk factor for TB infection becoming active

TB disease, speeding the progression from latent or recently acquired infection to active clinical disease. Furthermore TB is also having a dangerous impact on HIV for the for evidence suggest that there is increased HIV replication when co-infected, speeding up the natural clinical progression of HIV infection.<sup>2,3</sup>

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In the era of ART, the integration of TB and HIV prevention, treatment care and support services has become crucial for the effective clinical management of TB/HIV co-infected patients.<sup>4</sup> Diagnosis of TB, at least by direct microscopy of AFB stained sputum smear and chest X-ray has become mandatory for ART investigation as per the guidelines of National center for AIDS and STI control (NCASC).<sup>5</sup> Although UNAIDS policy of HIV testing in patients being treated for TB has not been formally implemented yet in Nepal, very few studies conducted in selected health care centers of Nepal revealed that the rate of HIV infection among TB patients was much higher than the rate of infection in general population.<sup>6</sup>

In countries with higher HIV prevalence, up to 80% of people with TB test positive for HIV. Globally approximately 30% of HIV-infected persons are estimated to have latent TB infection. In 2008, there were an estimated 1.4 million new cases of TB among persons with HIV infection and TB accounted for 23% of AIDS-related deaths.

Although research on TB and HIV were conducted in different parts of Nepal, until now no specific studies on ATT response in HIV patients have been done.<sup>8-10</sup> Antiretroviral therapy Clinic of Seti Zonal Hospital, Dhangadi is the referral Center for nine districts of Far western Nepal (where high prevalence of HIV is found in comparison to other region) and few districts of mid western region.<sup>11</sup> Therefore, this study was conducted with objectives to categorize TB and to evaluate the ATT response in HIV patients.

## METHODS

A prospective observational study was carried out in 135 TB/HIV co-infected patients visiting ART center in Seti Zonal Hospital, Dhangadi between December 2006 and December 2008. Before initiation of research informed consent was taken from the hospital administration as well as from individual patients. Before initiation of ART, all the patients were subjected to investigation of TB. Direct microscopy of acid fast bacilli (AFB) stained sputum and chest X-ray were done for all the patients. Additionally, for clinically

suspected cases, other relevant samples such as pleural fluids, lymph node aspirates, ascetic fluid aspiration were investigated and mantoux test was also done for the diagnosis of TB.<sup>12</sup> Only the HIV patients with active TB disease and undergoing ATT were included in the study (inclusion criteria). ATT was administered through DOTS. TB patients were categorized by site and bacteriological status as: smear positive PTB (a patient with at least 2 sputum specimens positive for AFB), smear negative PTB (a patient with TB symptoms with at least 2 sputum specimens negative for AFB and with clear radiographic abnormalities consistent with active PTB) and EPTB (TB of organs other than lungs). Similarly, they were categorized by previous treatment as: treatment complete/cure (patients who had completed the prescribed dose of drugs and/or with sputum smear negative after treatment), default (patients who completed at least one month treatment and returned after at least 2 months' interruption of treatment) and transfer out (patients who had transferred to another center). All the necessary information of these patients undergoing therapy was recorded in the standard registered form from which the relevant data were entered into SPSS 11.5 version and analyzed.

## RESULTS

Of the 135 TB/HIV co-infected patients, 97 (71.85%) were males and over 119 (88.15%) of the patients were in the age group 21 to 50 years (table 1). Majority 84 (62.22%) of the patients had CD4 count less than or equal to 200 per cu mm blood (Table 2). The age group 41-50 years was predominant 55 (40.74%) followed by 31 to 40 years 48 (35.56%) as shown in (Table 3). Pulmonary TB was the most common type accounting 92 (68.15%) followed by lymph node TB 16 (11.85%) and Abdominal TB 7 (5.19%) as shown in (Table 4). Among Pulmonary TB, 59 (43.70%) were sputum positive and 33 (24.44%) were sputum negative. Over 30 (22.22%) of the patients had been cured, 72 (53.33%) had completed the ATT and 17 (12.59%) were default (table 5). Candidiasis was found to be major opportunistic infections and diarrhea as the most common clinical sign and symptoms of these patients as shown in (Table 6).

**Table 1. Distribution of Subjects by Age and Gender.**

Age group (in years )	Male n (%)	Female n (%)	Total n (%)
Up to10	5 (5.15)	2 (5.26)	7 (5.19)
11-20	1 (1.03)	1 (2.63)	2 (1.48)
21-30	21 (21.65)	13 (34.21)	34 (25.19)
31-40	38 (39.18)	14 (36.84)	52 (38.52)
41-50	26 (26.80)	7 (18.42)	33 (24.44)
51-60	5 (5.15)	1 (2.63)	6 (4.44)
61-70	1 (1.03)	0	1 (0.74)
Total	97 (100)	38 (100)	135 (100)

**Table 2. Distribution of Subjects by CD4 range and Gender.**

CD4 range	Male n (%)	Female n (%)	Total n (%)
Up to 200	64 (65.98)	20 (52.63)	84 (62.22)
201- 400	23 (23.71)	9 (23.68)	32 (23.70)
401-600	9 (9.28)	6 (15.79)	15 (15.79)
Above 600	1 (1.03)	3 (7.89)	4 (7.89)
Total	97 (100)	38 (100)	135 (100)

**Table 3. Distribution of subjects by Weight group and sex.**

Weight group (in Kg)	Male n (%)	Female n (%)	Total n (%)
Up to10	3 (3.09)	1 (2.63)	4 (2.96)
11-20	3 (3.09)	0 (0)	3 (2.22)
21-30	1 (1.03)	4 (10.53)	5 (3.70)
31-40	32 (32.99)	16 (42.11)	48 (35.56)
41-50	40 (41.24)	15 (39.47)	55 (40.74)
51-60	18 (18.56)	2 (5.26)	20 (14.81)
Total	97 (100)	38 (100)	135 (100)

**Table 4. Distribution of Subjects by types of Tuberculosis**

Types of TB	n (%)
Pulmonary	92 (68.15)
Sputum Positive	59 (43.70)
Sputum Negative	33 (24.44)
Lymph node TB	16 (11.85)
Pleural effusion	13 (9.63)
Abdominal TB	7 (5.19)
TB meningitis	5 (3.70)
Spinal TB	2 (1.48)
Total	135(100)

**Table 5. Distribution of subjects by ATT response.**

ATT response	n (%)
Cured	30 (22.22)
Completed ATT	72 (53.33)
Defaulter	17 (12.59)
Death during ATT	5 (3.70)
transfer out	11 (8.15)
Total	135 (100)

**Table 6. Distribution of patients by clinical signs and Symptoms and/or opportunistic infections (OIs).**

Clinical signs and Symptoms and/ or OIs	n (%)
Candidiasis	57 (53.27)
Diarrhoea	22 (20.56)
Herpes zoster	6 (5.61)
Pneumonia	5 (4.67)
Sinusitis	4 (3.74)
Scabies	3 (2.80)
Dysentery	3 (2.80)
Tonsillitis	2 (1.87)
Lymphadenitis	2 (1.87)
Cervicitis	1 (0.93)
Pelvic inflammatory diseases	1 (0.93)
Leucoplakia	1 (0.93)
Total	107 (100)

## DISCUSSION

This study showed the high male female ratio (> 2.5:1). This is due to the high migration rate of male in this region. They migrate to major cities of India (Mumbai, Delhi, Pune etc), acquire HIV and visit this clinic at late stage. One of the major findings of this study was the documentation of good treatment outcome of ATT during ART in this resource limited setting. Table 5 reveals that there is 102 (75.55%) of successful treatment of TB through DOTS, 17 (12.59%) default and 5 (3.70%) death rate. The variation in the outcome is due to difference in the time period of ATT enrollment. Majority of the patients had enrolled in the ATT before initiation of ART, some were enrolled after few months of the initiation of ART and others were enrolled after few years of initiation of ART. A similar study in South Africa documented TB cure rate of <50% and default rate of 23% in patients undergoing ART.<sup>13</sup> Another important findings of this study is the documentation of lymph node TB as major EPTB in HIV positive patients. A similar study conducted in Pune (India) demonstrated that 92% of the EPTB cases were of lymph node type.<sup>14</sup>

Our study demonstrated that the majority (68.1%) of the TB patients visiting this clinic had pulmonary TB. A similar study conducted in HIV positive children in West Indies had also documented high rate of PTB (87%).<sup>15</sup> Similar to many previous studies this study demonstrated that candidiasis was the most common OI and diarrhoea as the most common clinical sign and symptoms in HIV positive patients.<sup>10,16</sup> More extensive research on this topic is recommended to identify the cause of 17 (12.59%) default rate and 5 (3.70%) death rate.

## CONCLUSIONS

Good ATT response was observed among TB/HIV co-infected patients visiting this setting. PTB and lymph node TB was found to be most common in this group of patients.

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