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Original Article

Tuberculosis and other clinical presentation of HIV/AIDS in patients with or without undergoing antiretroviral therapy in Kathmandu

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Abstract
Objectives: To screen tuberculosis (TB) and examine the clinical presentation of AIDS in HIV sero-positive persons.
Methods: A Cross-sectional study was designed. One hundred HIV infected persons were randomly selected from different parts of the country visiting Tribhuvan University, Teaching Hospital, Kathmandu and different HIV/AIDS care centres. After taking informed consent, questionnaires were filled and three sputum specimens from each person were collected to investigate tuberculosis by Ziehl-Neelsen staining and culture. Data generated were entered into SPSS 11.5 and relevant statistical tools were applied.
Results: Among 100 HIV infected cases, 66 (66%) were males and 34 (34%) were females. Sixty percent of the cases were in the age group of 21-30 years. Majority of them were Smokers (41%), alcoholics (34%), illiterates (54%) and unemployed (59%). Heterosexual activity (51%) was found to be the major risk factor for HIV infection. Of the 100 HIV cases, 23 (23%) were co-infected with tuberculosis of which 18(78%) were sputum smear negative tuberculosis, mostly developed in late stage of HIV infection. Weight loss (54%) and diarrhoea (43%) were the major clinical presentations of AIDS. Antiretro-viral therapy non-receiver were more likely to suffer with various clinical disorders/TB as compared to ARV therapy receiver but the values were statistically insignificant, $\chi 2$ values ranging from 0.003 to 2.24, $p>0.05$.
Conclusion: Prevalence of tuberculosis was still high in HIV/AIDS patients, and specifically, sputum smear negative tuberculosis cases constituted the significant proportion, particularly in late stage of HIV infection. Weight loss and diarrhoea were found to be the major clinical presentation of AIDS. Illiterate and unemployed young adults involved in unsafe sexual practice and drug addiction were high risk of acquiring HIV infection.

Key words: Clinical features, HIV/AIDS, Kathmandu; Smear Negative Tuberculosis

Human immunodeficiency Virus (HIV) causes progressive impairment of the body's cellular immune system leading to increased susceptibility to tumours, and the fatal conditions knows as acquired immunodeficiency syndrome (AIDS)[1]. Due to lack of vaccines and/or effective easily accessible therapies, the disease is posing a life long devastation not only to the individual but also to the society. Thus, the disease is considered one of the major public health as well as socio-economic problems. Nepal's social economic status, prevailing norms and values, cultural myths on sex and sexualities and huge population of marginalized communities make it extremely vulnerable to the HIV/AIDS epidemic.

From the very beginning of diagnosis of HIV/AIDS in 1981, many opportunistic infections and HIV related conditions have been described. Among the major clinical manifestation of AIDS, fever, weight loss and diarrhoea are considered important for the surveillance purpose in high prevalence countries. Among the different opportunistic infections (OIs) , tuberculosis is the most common in AIDS accounting 40% AIDS death in Africa and South East Asia[1].

Antiretroviral (ARV) drugs inhibit the replication of HIV and therefore immune deterioration can be delayed resulting in the improvement in survival and quality of life.

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Among different consideration prior to the initiation of ARV, identification of current and past HIV related illness and identification of co-existing medical conditions and medication in use that may influence the choice of therapy (such as TB or pregnancy) as well as current symptoms and signs are crucial. Thus, the first step before introducing ARV is to diagnose, prevent and cure opportunistic infections, particularly TB[2]. In recent years, bacterial infections in HIV infected patients have been modified because of ARV therapy and OIs prophylaxis[3].

The estimated and reported cases of HIV/AIDS in Nepal is about 70,000 and 6990 (as of June 30, 2006) respectively[4]. TB/HIV co-infection is a rising trend. It was observed that in 1998-1992, out of 14 AIDS cases 11 cases (78.5%) had TB where as during 1998-2002, out of 442 AIDS cases 357(80.76%) had TB[5]. It has been reported that non-specific symptoms like weight loss (98.4), fever (93.4) and diarrhoea (74.3) contribute for the majority of the presentation of HIV/AIDS[6]. In Nepal very few number of PLWHA are undergoing ARV therapy (only 336 as of August 2006) [4].

It has been felt that information about the HIV related clinical presentation and other related characteristics including risky behaviour are essential component for the surveillance of HIV/AIDS and diagnosis of TB in course of AIDS is a part of HIV/AIDS care/management programme. So this study was conducted to support the ongoing HIV/AIDS prevention, treatment care and support programme in a tertiary care hospital based setting with patient coverage through the country.

Materials and methods

A cross-sectional study was conducted by central department of microbiology, Tribhuvan University, Kirtipur, in collaboration with Tribhuvan University teaching hospital (TUTH), Maharajgunj during January 2004 to August 2005. Altogether 100 HIV sero-positive confirmed patients, both symptomatic and asymptomatic, were enrolled in this study. They were randomly selected from out patients /indoor section of TUTH and different HIV/AIDS care centres - Nava kiran plus, sparsha Nepal, Karuna Bhavan, Sneha Samaj, Maiti Nepal, Nepal Plus, Vision plus, SACTS-VCT, Nepal Youth, Aastha positive group and Blue diamond society. After approval by the Ethical Review Board of Nepal Health Research Council, patients were selected randomly, informed consent was taken and pre-structured questionnaires were filled to collect the personal information, socio-demographic and clinical presentation of HIV/AIDS patients. There sputum Specimens were then collected for the diagnosis of tuberculosis by conventional methods such as direct microscopy of AFB stained smear, AFB culture by using standard protocol described by WHO[7]. In direct microscopy 3 sputum specimens i.e. 1st spot specimen, early morning specimen and 2nd spot specimen were collected, stained by ziehl-Nelsen staining technique and then reporting was done according to WHO/IUATLD grading system. In cultural technique, one early morning specimen was subjected to modified Petroff's method for decontamination and then 400 micro litre deposit was inoculated into 3% Ogawa medium followed by incubation at 37^{0}c for 8 weeks. The data obtained from questionnaire and biochemical test results were entered into SPSS 11.5 and Mean, median, range were computed.

Result

Among one hundred HIV infected persons, 66(66%) were males and 34(34%) were female. Sixty percent of the patients were in the age group of 21-30 years, the mean and median age being 30 years and 28.2 years respectively. Forty one percent were smokers and 34% were alcoholics. Fifty nine percent were unemployed and 54% were illiterate. Fifty one percent were injecting drug users (Table 1).

Tuberculosis was detected in 23 cases of which 18 were smear negative. Weight loss was found to be major presentation of AIDS (54%) followed by diarrhoea (43%) and fever (40%). Anti retroviral therapy non receiver were more likely to suffer with various clinical disorder/TB as compared to ARV therapy receiver but the values were statistically insignificant, $\chi 2$ values ranging from 0.003 to 2.24, $p>0.05$ (Table 2).

In this study, tuberculosis burden was found significantly higher in two points of HIV diagnosis – In the first year of HIV diagnosis, 9 TB cases were detected i.e. HIV and TB were diagnosed simultaneously, probably due to late diagnosis of HIV, and then the fifth year of HIV diagnosis in which 5 TB cases were found among early HIV detected cases (Figure 1).

Table 1: Socio-demographic characteristic of studied cases

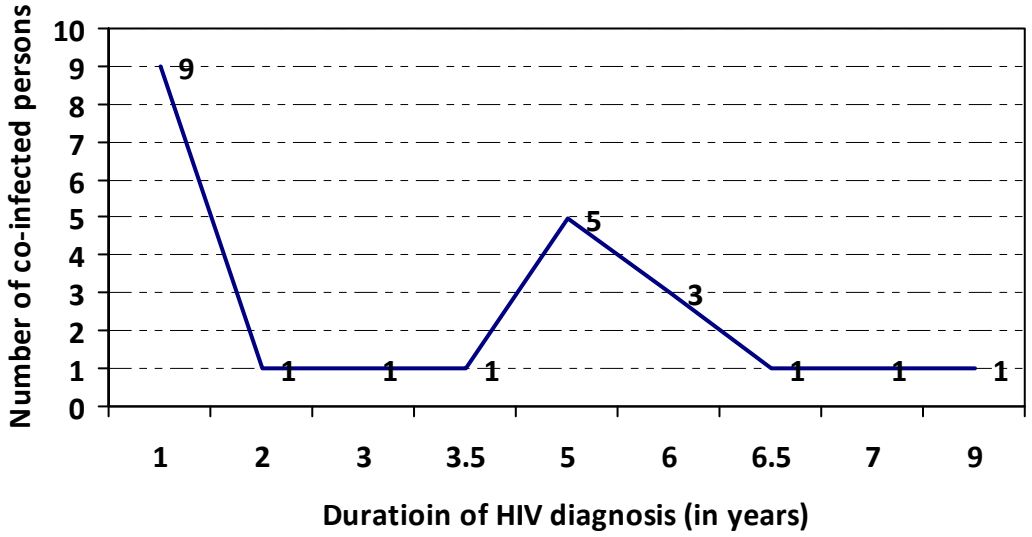
Variables		N=100 Number (%)
Age group (Yrs)	11-20	2 (2)
	21-30	60 (60)
	31-40	31 (31)
	41-50	5 (5)
	51-60	2 (2)
	Mean age	31
	Median age	28.2
Sex	Male	34 (34)
	Female	66 (66)
Habit	Smoker	41(41%)
	Alcoholic	34 (34)
Occupation	Unemployed	59 (59)
	Housewife	7 (7)
	Business	6(6)
	Agriculture	5(5)
	Service	3(3)
	Mason	3(3)
	Driver	2(2)
	Foreign employer	2(2)
	Others	13(13)
Education	Illiterate	54(54)
	Literate	31(31)
	Secondary Schooling	9(9)
	Intermediate	3(3)
	Primary Schooling	2(2)
	Bachelor and Above	1(1)
Risk Behaviour	Heterosexual Activities	51(51)
	Using injecting drugs	39(39)
	Homosexual	6(6)
	Organ transfusion	4(4)

Table 2: Clinical features in HIV/AIDS patients with or with out undergoing ARV therapy

Symptoms	With ARV therapy N(%)	Without ARV therapy N(%)	$\chi 2$
Tuberculosis*	2(22.2)	21(23.1)	$\chi 2 = 0.12$, $p>0.05$
Weight loss	4(44.4)	50(54.9)	$\chi 2 = 0.06$, $p>0.05$
Diarrhoea	2(22.2)	41(45.1)	$\chi 2 = 0.93$, $p>0.05$
Fever	2(22.2)	38(41.8)	$\chi 2 = 0.61$, $p>0.05$
Chest pain	1(11.1)	39(42.9)	$\chi 2 = 2.24$, $p>0.05$
Cough	3 (33.3)	35(38.5)	$\chi 2 = 0.003$,$p>0.05$
Night sweat	3 (33.3)	33(36.6)	$\chi 2 = 0.03$, $p>0.05$

* 18 were sputum smear negative tuberculosis

Fig 1: Development of TB course of AIDS



Discussion

This Kathmandu based survey documents the 23% of tuberculosis among HIV infected persons. During 2001-2002 a study carried out in Tansen Mission Hospital showed 10.8% Tuberculosis in HIV/AIDS patients[8]. National survey 1991-2000, documented 312 tuberculosis in 473 AIDS cases (66% co-infection) [5]. Lesser prevalence in our study, as compared to national survey, might be inclusion of both HIV as well as AIDS cases where as previous survey included only AIDS cases of large sample size.

Another important and in fact one of the new findings of its kind, was the documentation of 78% (18 out of 23) sputum smear negative tuberculosis cases in HIV population as described in WHO published literatures[9]. Thus it is recommended that cultural method should also be included along with direct microscopy to screen higher number of tuberculosis cases among HIV population. Of the two peaks of the development of tuberculosis in course of AIDS, first peak (with in a year) suggests the late diagnosis of HIV i.e. TB and HIV are diagnosed at the same time. The 2nd peak (during 5th and 6th year) suggests that HIV has caused the resurgence of TB. This finding suggested for the recommendation of repeated screening of TB after fifth year of HIV diagnosis and consideration of appropriate timing for the initiation of ART/ATT(Anti TB Therapy).

This study demonstrated that weight loss was major clinical presentation of AIDS followed by diarrhoea and fever, which were considered as indicators of AIDS for surveillance purpose. National survey conducted during nineties documented 98.4% weight loss, 93.4% fever and 74.3% diarrhoea in AIDS cases of Nepal[6]. Comparatively lesser presentation of AIDS symptoms in our study might be due to inclusions of both AIDS as well as HIV undergoing ART and comparatively lesser sample size. Although ART non- receiver were more likely to suffer with various clinical disorder/TB as compared to ART receiver, $\chi 2$ values are statistically insignificant. This may be due to incomparable data between ART receiver and ART non-receiver. We could include only 9 ART receivers among 100 sampled population because only 100 PLWHA were undergoing ART in Kathmandu during the study period.

Social demographic characteristic of the studied population showed that illiterate and unemployed young adults (21-30 years) involved in unsafe needle exchange/sex were more vulnerable to HIV infection as reported by NCASC and other studies [4,8,10]. Thus full implementation of intervention strategies aimed at these risk factors are recommended for prevention and control of HIV/AIDS.

Conclusion

This study documented the high prevalence of tuberculosis, mainly sputum smear negative type developing in late stage of HIV infection. Weight loss was found to be the major clinical presentation followed by diarrhoea and illiterate and unemployed

young adult involved in unsafe sexual practice and drug addiction were high risk of acquiring HIV infection.

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