PREVALENCE OF PULMONARY TUBERCULOSIS AMONG HIV INFECTED DRUG USERS IN POKHARA, KASKI, NEPAL

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ABSTRACT

Introduction: Studies conducted in different countries suggest that HIV infected drug users have a higher chance of acquiring pulmonary tuberculosis (PTB) in comparison to general population. However, there is no information about the prevalence of PTB among HIV infected drug users in Nepal.

Objectives: The main objectives of this study were to document the socio-demographic and behavioral attributes; clinical symptoms and prevalence of PTB in HIV infected drug users in Pokhara, Kaski, Nepal.

Methods: In a cross-sectional study, we enrolled 62 HIV infected drug users not diagnosed with PTB in the past from five HIV care centers in Pokhara. Using questionnaire, first we documented participants' socio-demographic and behavioral attributes and clinical symptoms. This was followed by tuberculosis testing in all enrolled participants at the Regional Tuberculosis Center (RTC) in Pokhara.

Results: Of the 62 HIV infected drug users, PTB was diagnosed in 3 (4.8%) participants. All of them were male in the productive age group. Cough was the major clinical symptoms (54.8%) in the study participants. About 91.9% participants reported they had acquired HIV infection through injecting drug use. Buprenorphine/heroin was the major drug used (48.4%) for addiction.

Conclusion: This study provides first evidence of prevalence of PTB in HIV infected drug users in Nepal. The findings suggest tuberculosis testing be conducted in HIV infected persons including the HIV infected drug users in Nepal. Early detection of PTB in HIV infected drug users may help to reduce the morbidity and mortality as well as spread of TB in the community.

Keywords: Drug users, HIV/AIDS, Nepal, Pokhara, Tuberculosis

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INTRODUCTION

Injecting drug users (IDUs) are at increased risk of acquiring and transmitting HIV infection primarily because of unsafe injection practices and high risk sexual behaviour.[1] Worldwide, the number of IDUs

is estimated at approximately 13.2 million. Over ten million (78%) IDUs live in developing countries (Eastern Europe and Central Asia, 3.1 million; South and South-east Asia, 3.3 million; East-Asia and Pacific, 2.3 million). HIV prevalence among drug users in many countries including Nepal has been estimated above 20%.[2.] In 2007, the prevalence of HIV was 5.6% in Pokhara and 18.2% in Kathmandu.[3,4] However, the prevalence of PTB among HIV infected drug users is not known either in Pokhara or Kathmandu, Nepal.

HIV is a known risk factor for the development of tuberculosis in both the recently acquired tuberculosis infection as well as in latent TB cases.[6] Other known risk factors for TB include inadequate treatment, poverty, malnutrition, overcrowding, armed conflict and increasing number of displaced persons.[7] It is possible that the spread of TB in HIV infected drug users could be higher due to their behavioral characteristics such as poor adherence to therapy, nutritional factors and gathering including close contacts. Studies have shown that there is higher chance for the development of tuberculosis in drug users in comparison to general population of the community.[8] In many settings; the epidemic of IDUs has become intertwined with the HIV and the TB epidemics. Health systems have often responded with separate policies and structures to the detriment of the individual user and their communities.[9] Studies have shown that the leading causes of mortality in both HIV negative and positive IDUs are overdose, AIDS, tuberculosis and accident/ trauma.[10, 11]

Till date studies conducted on TB/HIV co-epidemic in Nepal have been focused in hospital settings. No community based TB/HIV co-epidemic study has been conducted specifically targeting drug users.[12,13,14,15] So, this community based cross-sectional study was carried out in HIV infected drug users to investigate their socio-demographic, behavioral and clinical symptoms as well the prevalence of pulmonary tuberculosis in this particular population in Pokhara, Kaski.

METHODOLOGY

This research was approved by Nepal Health Council and was carried out in the Western Regional TB Centre (RTC) between December 2006 and December 2007. Altogether 62 HIV infected (both symptomatic and asymptomatic) drug users were recruited from: Friends of Hope (FOH), Ranipauwa; Community Support Group (CSG), Damside; Nauloghumti, New Road and Paluwa Srijana Chowk. The interviewer went to these centers to conduct interview and collect the sputum specimens of HIV positive subjects. Participants were selected by random sampling method using the patients' lists available in these centers.

After taking written informed consent, study participants were interviewed using questionnaire, which collected data on socio-demographic, behavioral and clinical features. Then, three sputa specimens (first spot, early morning, and second spot) were collected and transferred to Mycobacteria Research Laboratory at RTC, Pokhara. All three sputa specimen were processed for Acid Fast Bacilli staining using Ziehl Neelsen method.[16] In addition, early morning sputum were subjected to modified Petroff's method for decontamination and then inoculated into 2 sets of 3% Ogawa medium followed by incubation at 37^0C for 6-8 weeks.[17] If the growth was obtained then colony morphology was studied, compared with standard positive control. All analysis (prevalence study) was performed using statistical package for social sciences (SPSS version 11.5).

RESULT

Among 62 HIV infected drug users, 59 (95.2%) were males and 3 (4.8%) were females. The age group 21-30 year was predominant (54.8%) followed by 31-40 year (30.6%). Most of them had primary level education (51.6%), married (64.5%), unemployed (42.2%) and acquired HIV infection through IDUs (91.9%) as shown in table 1. Buprenorphine/heroin was reported to be the major drug used for addiction (48.4%) followed by Buprenorphine/heroin + Brown sugar (27.4%). Majority of the subjects were using drug for 1 to 3 times per day (64.5%). The most frequent time of drug use was in the morning (91.9). Majority of the subjects (n=54) were using old/used needle (93.1%) with high rate of sharing (98.3) as shown in table 2.

Compared with female, more male participants reported they consumed alcohol (52.5 vs. 33.3%). In

contrast, more female than male participants reported they smoked tobacco (100 vs 88.1%). Cough was the major clinical symptoms (54.8%) followed by weight loss (40.3%) in all participants, as shown in table 5.

Among the 62 participants, 3 were co-infected with TB of which all were culture positive and only one was both culture and sputum smear positive. Therefore, the overall prevalence of TB in HIV infected drug users was 4.8% (table 3). All the three co-infected patients were in their productive age that is between 21 and 40 years as shown in table 4.

Table 1: Socio-demographic characteristics of study participants by gender

Characteristics	Male Number (%)	Female Number (%)	Total Number (%)
Age group (Yrs)			
11-20	3(5.1)	0	3(4.8)
21-30	31(52.5)	3(100)	34(54.8)
31-40	19(32.2)	0	19(30.6)
41-50	6(10.2)	0	6(9.7)
Total	59(100)	3(100)	62(100)
Marital status			
Married	38(64.4)	2(66.7)	40(64.5)
Unmarried	16(27.1)	1(33.3)	17(27.4)
Divorced	5(8.5)	0	5(8.1)
Total	59(100)	3(100)	62(100)
Education			
Illiterate	6(10.2)	1(33.3)	7(11.3)
Primary	18(30.5)	1(33.3)	19(30.6)
Secondary	31(52.5)	1(33.3)	32(51.6)
Higher Sec.	4(6.8)	0	4(6.5)
Total	59(100)	3(100)	62(100)
Occupation			
Unemployed	25(42.4)	3(100)	28(42.2)
Businesses	11(18.6)	0	11(17.7)
Volunteer	9(15.3)	0	9(14.5)
Driver	4(6.8)	0	4 (6.5)
Service	4(6.8)	0	4 (6.5)
NGO/INGO	3(5.1)	0	3(4.8)
Plumber	1(1.7)	0	1(1.6)
Total	59(100)	3(100)	62(100)
HIV transmission			
IDU	54(91.5)	3(100.0)	57 (91.9)
Sexual	5(8.5)	0	5(8.1)
Total	100 (100.0)	50 (100.0)	150(100.0)

Table 2: Behaviour characteristic of study participants				
Features		Male (N=59) Number (%)	Female (N=3) Number (%)	Total (N=62) Number (%)
Alcohol addiction	Yes	31(52.5)	1(33.3)	32(51.6)
Smoking habit	Yes	52(88.1)	3(100)	55(88.7)
Drugs used	Buprenorphine/heroin	27(45.8)	3(100)	30(48.4)
	Buprenorphine/heroin + Brown sugar	17 (28.8)	0	17(27.4)
	Buprenorphine/heroin + morphine	6(10.2)	0	6(9.7)
	Ganja	3(5.1)	0	3(4.8)
	morphine	2(3.4)	0	2(3.2)
	Brown sugar	2(3.4)	0	2(3.2)
	Nitroson	2(3.4)	0	2(3.2)
Mode of drug use	IDU	35(59.3)	3(100)	38(61.3)
	Both	20(33.9)	0	20(32.3)
	Oral	4(6.8)	0	4(6.5)
Frequency of use#	3 times/day	18(30.5)	1(33.3)	19(30.6)
	2 times/day	12(20.3)	0	12(19.4)
	Once a day	7(11.9)	2(66.7)	9(14.5)
	5 times/day	7(11.9)	0	7(11.3)
	4 times/day	4(6.8)	0	4(6.5)
	20 times/day	2(3.4)	0	2(3.2)
	Once in a week	2(3.4)	0	2(3.2)
	25 times per day	2(3.4)	0	2(3.2)
	7 times per day	2(3.4)	0	2(3.2)
	15 times per day	2(3.4)	0	2(3.2)
	10 times per day	1(1.7)	0	1(1.6)
Most frequent time of drug use	Morning	54(91.5)	3(100)	57(91.9)
	Morning, evening and day	3(5.1)	0	3(4.8)
	Day time	2(3.4)	0	2(3.2)
Type of needle*	old/used	51(92.7)	3(100)	54(93.1)
	Disposable (Always)	2(3.6)	0	2(3.4)
	Disposable (Sometime)	2(3.6)	0	2(3.4)
Sharing of needle*	Yes	54(98.2)	3(100)	57(98.3)
	No	1(1.8)	0	1(1.7)

***4 cases are oral drug user and hence analysis is done for only 58 cases.**

 # In IDUs cases, frequency of use is equivalent to the number of syringes per day.

Table 3: Distribution of study participants by TB status and sex			
TB status	Sex		Total
	Male Number (%)	Female Number (%)	Number (%)
Yes	3 (5.1)	0	3 (4.8)
No	56(94.9)	3 (100)	59 (95.2)
Total	59 (100)	3 (100)	62(100)

Table 4: Distribution of the study participants by TB status and age group			
Age group (in yrs)	TB status of patients		Total
	Yes Number (%)	No Number (%)	Number (%)
11-20	0	3(5.1)	3(4.8)
21-30	2(66.7)	32(54.2)	34(54.8)
31-40	1(33.3)	18(30.5)	19(30.6)
41-50	0	6(10.2)	6(9.7)
Total	3(100)	59(100)	62(100)

Table 5: Distribution of clinical signs and symptoms among study participants			
Clinical features	Male (N=59) Number (%)	Female (N=3) Number (%)	Total Number (%)
Cough	31(52.5)	3(100)	34(54.8)
Weight loss	23(39.0)	2(66.7)	25(40.3)
Chest pain	23(39.0)	1(33.3)	24 (38.7)
Fever	20(33.9)	2(66.7)	22(35.5)
Loss of weight	19 (32.2)	1(33.3)	20(32.3)
Diarrhoea	13(22.0)	1(33.3)	14(22.6)
Night sweat	12(20.3)	0	12(19.4)
Haemoptysis	4(6.8)	1(33.3)	5(8.1)

DISCUSSION

The results of this study show that prevalence of PTB is 4.8% in HIV infected drug users in Pokhara, Nepal. On ethical ground all diagnosed pulmonary TB cases in our study were put under anti-TB treatment under DOTS strategy of NTP Nepal.

Several studies conducted in the past have suggested higher prevalence of PTB in HIV infected persons. For example, on PTB surveillance among HIV infected persons in Cambodia; authors have documented 9% of participants with active TB.[18] Similarly, in the study carried out by Montefiore Medical Center, New York, authors have documented the TB incidence rate among anergic, HIV sero-positive subjects as 6.6 cases per 100 person- years.[19] A study conducted in South India (Chennai) has shown TB prevalence among HIV positive IDUS as 33.9%, which is much higher than what we have reported in our study.[20] A study carried out in drug users, registered at the Indian Council of Medical Research Unit in northeastern states of India has demonstrated TB as the most common opportunistic infection (12.5% for pulmonary TB and 6.7% for extra-pulmonary TB) in HIV infected drug users.[21]

In terms of the drug users' behavioral characteristics, our findings show that IDU constitute the significant

proportion of drug users with higher rate of unsafe needle sharing. A study conducted among drug users in Pokhara has revealed similar result. [22]

Our study has demonstrated that cough is the major clinical symptom of HIV infected drug users. A study conducted at the department of Microbiology, King's College London has documented prevalence of cough in 83.6% of HIV infected drug users, which is about one and half times higher than what we have reported in our study.[23] Similar findings have been reported by Cain et al, where authors have documented cough, weight loss and fever in more than 50% of participants. [24]

However, we cannot ignore several limitations in this report. Among other one important limitation of this study is its small sample size. Thus, findings of our study need to be validated by conducting similar studies with larger sample size in other parts of the country.

CONCLUSION

The success of tuberculosis control program depends on the early detection and complete treatment of the tuberculosis disease. In conclusion, our study provides first evidence of prevalence of PTB in HIV infected drug users in Nepal. Our findings suggest that there is a need of joint TB/HIV coordination programme for the early diagnosis and treatment of tuberculosis in the high risk group like HIV infected drug users. We recommend that NTP Nepal should initiate the early diagnosis of PTB among high risk group like this even through culture for TB bacilli as sputum microscopy may not detect TB bacilli in such cases.

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