HIV AND TUBERCULOSIS CO-INFECTION IN A REFERRAL CHEST HOSPITAL

Lt Col VK KATARIA ^{*}, Lt Col D ROSHA ⁺, Brig KK MAUDAR[#]

ABSTRACT

Serving personnel of Armed Forces admitted with tuberculosis between Apr 1996-1999 were evaluated for co-infection of tuberculosis and HIV. Sixty (1.06%) of tuberculosis patients were found to be HIV positive. Initial test was done by spot kits and subsequently confirmed by ELISA on two different samples. Majority of the cases were in sexually active age group 48 (80%). Alcohol and smoking was associated in 80% cases. Thirty six (60%) were sputum smear positive for AFB. Twenty eight (46.7%) gave history of exposure to sex workers. Family members were not available for study. Sero prevalence of HIV in association with tuberculosis is less in Armed Forces compared to civil population.

MJAFI 2000; 56 : 298-300

KEY WORDS : HIV; Seroprevalence; Tuberculosis.

Introduction

HIV infection in humans was first reported from USA in 1983 [1]. Subsequently reports of HIV infection started pouring in throughout the world. The first report from India was from Chennai in 1986 in commercial sex workers [2].

Tuberculosis is still a major cause of morbidity and mortality in developing countries. In the western world where mycobacterial diseases were waning, tuberculosis is gaining epidemic proportion after the advent of HIV infection [3].

HIV is known to cause immunosuppression and dormant lesions of tuberculosis flare up after HIV seroconversion in these patients [4].

The present study was conducted to find out the epidemiologic and demographic profile of HIV and tuberculosis co-infection in patients of Armed forces.

Material and Methods

Material in this study was provided by 5639 TB patients admitted in a referral TB and chest diseases hospital between April 96 to April 99.

All the patients were screened for HIV antibodies by various spot kits namely BISPOT, TRIDOT, CAPILLUS and IMMUNOCOMB. Those who were found to be positive were rechecked before sending samples for confirmation by ELISA test. Test methodology was as per kit insert. Other tests conducted were sputum for AFB x 3 days, by ZN stain, sputum culture for Mycobacterium tuberculosis by LJ media, Mantoux test and X-Ray chest PA view.

Age, marital status, religious denomination, heterosexual promiscuity, blood transfusion, drug abuse habits and unit location, (18-24 months stay with family was considered as coming from peace location) were analyses based on history provided by pa-

tients.

Those consuming 120-180 ml alcohol per day for 2-3 years were taken as alcohol consumers and among smokers 3-4 bidi/cigarette consumption per day for more than 3 years were considered as smokers. Follow up of HIV positive cases could not be done as these were transferred to another service hospital. Family members of these patients were not available for study.

Statistical analysis was done by Chi square method [5]

Results

TABLE 1

Age distribution of TB and HIV cases

Age in years	No. of cases		Percentage
	TB	HIV	
18-30	3068	22	0.72%
31-40	1906	26	1.36%
41-50	580	12	2.07%
Above 50	85	-	-
Total	5639	60	1.06%

It is observed that HIV cases were in sexually active age group.

TABLE 2

Risk behaviour analysis

Risk factors	HIV positive	Percentage
Hetero sexual promiscuous (CSW)	25	41.7%
Other than CSW	02	3.3%
Homosexual	01	1.7%
Blood Transfusion / product	00	-
IV drug users	00	-
Indeterminate (cause not known)	32	53.3%
Total	60	100.0%

CSW - Commercial sex worker

Heterosexual promiscuous exposure was commonest risk factor. None of

^{*}Classified Specialist in Pathology (Microbiology), ⁺Classified Specialist in Medicine and Chest Diseases, [#]Commandant, Military Hospital, Namkum, Ranchi - 834 010.

the HIV positive case was due to blood transfusion or drug addiction. 32 out of 60 HIV positive cases did not give history of any known risk factors.

Other Observations

HIV positivity by ELISA was 44 out of 4296 (1.02%) married patients and 16 out of 1343 (1.19%) unmarried patients. Difference in proportion between married and unmarried persons was not significant statistically.

23 of 3856 (0.39%) soldiers posted in non family station and 37 of 1783 (2.07%) posted in family stations, were HIV positive. The data is statistically highly significant ($P < 0.001$).

48 out of 60 HIV positive cases were habituated to consuming alcohol and smoking, where as remaining 12 cases did not give history of alcohol consumption at all, but they did smoke occasionally.

In 40% of the HIV negative cases sputum smear examination did not reveal acid fast bacilli by ZN stain. The diagnosis in these cases was based on x-ray chest, Mantoux test, haematological tests and clinical profile, bronchoscopy and broncho-alveolar lavage/findings.

In the first four months of 1999, 18 tuberculosis cases were HIV positive which shows increasing trend of co-infection.

No false positivity was seen in 60 HIV and tuberculosis co-infection cases by spot tests. All were confirmed by ELISA method.

HIV positivity was seen in all religious groups. Data was not statistically significant.

Discussion

In the present study 1.06% patient had co-infection of tuberculosis and HIV. These patients belong to various states of the country and represent the overall demographic pattern of the country.

Sivaraman from South India reported 2.7% co infection of HIV and TB [6]. Soloman et al reported increasing trend of co infection from 0.72 to 3.4% during 1991-93 [7]. A study conducted at Lucknow revealed 1.42% prevalence of HIV in TB patients [8]. In our study co-infection is lower than other studies. A study conducted on recruits of armed forces from various centers have revealed a 0.46/1000 seroprevalence for HIV infection [9].

HIV seroprevalance in blood donors from Bangalore is 1%, but in Hyderabad and Calcutta it is less than 1% [10]. Co-infection of HIV & TB in Western Countries is very high 59% in Cuba [11], 51% in San-Francisco [12], 63% in Los Angeles [13]. However the seroprevalence of HIV in the general population is also high in these countries.

Eighty percent of the cases in our study gave history of consumption of alcohol and cigarette smoking. Alcohol therefore is contributory factor for visiting commercial sex workers.

Separation of the soldier from his wife for long duration due to commitment of training, non availability of accomodation in station, helping civil authorities

in floods, earthquakes and riots is the cause of extra marital sexual exposure. Almost all the cities in our country cater for sex needs of population at large. HIV seroprevalence in prostitutes and risk group from various states vary between 1.15-51% [14,15]. Blood transfusion borne HIV infection was not seen at all in our study. This is perhaps due to voluntary donation by healthy soldiers and strict checking of HIV before issue of blood for transfusion in military hospitals. There were no drug addicts in our study.

Heterosexual promiscuity, visit to other than commercial sex worker and homosexuality were seen in 46.7% of cases. These data are based on history provided by individuals. In 53.4% of cases no cause for transmission could be ascertained inspite of repeated inquiry. Family members were not available to check their seroprevalence. A study from British Columbia identified high risk behaviour factors in 90% of the cases [16].

Thirty seven (61.6%) cases of HIV and TB co-infection were from family station which correspond to urban population distribution of disease in civil areas.

BISPOT, TRIDOT, CAPILLUS & IMMUNOCOMB test kits were used in this study. All were found to be equally sensitive and specific as ELISA, as none of the tests found to be positive by these kits was negated by ELISA.

References

1. Anthony S, Fauci H, elifford lane. Harrison's Principles of internal medicine. Mc Graw Hill, USA 14th ed. 1998;308:1791.
2. HIV Infection. Current status and future research plans, ICMR bull Dec 1991.
3. Hass DW, Desprez RM. Tuberculosis and immunodeficiency syndrome-A historical perspective on recent developments. Am J Med 1994;96:439-50.
4. WHO: tuberculosis programme. Kharger gazette May 1996;12.
5. Snedecor GW. Statistical methods. The IOWA state Univ Press IOWA USA 1956.
6. Sivaraman V, Fernandez G, Sambashiva Rao R. HIV infection in Pulmonary Tuberculosis, Ind J Tuberculosis 1992;39:35-40.
7. Soloman S, Anuradha S, Rajasekharan S. Trends of HIV infection in Pulmonary Tuberculosis in South India. Tubercle and Lung Dis 1995;76:17-9.
8. Kulshreshtha R, Nigam M, Sarin S, Mathur A. Prevalence of HIV in tuberculosis patients in AIDS. Ind J of Med Microbiol 1997;15(2):79-81.
9. Virk RS, Bhalwar R. HIV seroprevalence in adolescents and young adult male in India. A large community based epidemiological study. MJAFI 1999;55:104-6.
10. Lal S, HIV infection in India. Trend analysis. In INDO US

- CME programme, AFMC Pune 1994;9-10.
11. Diaz JM, Gonzalez NI, Saladrigas C, Perez AJ, Milan JC, Valdivia JA. Tuberculosis and HIV co-infection in Cuba. *Rev Cubana Med Trop* 1996;48(3):214-7.
 12. Chairson RE, Thewar CP. Tuberculosis in patients with Aids. *Am Rev Resp Dis* 1987; 136: 570-4.
 13. Asch SM, London AS, Barnes PF, Goleberg L. Testing HIV infection among TB patients in Los Angeles. *Am J Respir Crit Care Med*. Jan 1997;155(1):378-81.
 14. Pal D, Chattopadhyay UK, Raut DK, Das BN. HIV infection in Commercial Sex workers in Calcutta-A preliminary report. *Ind J Med Microbiol* 1999(1);17:32-3.
 15. Jana S. Personnel Communication.
 16. Blenkush MF, Korzeniewska KM, Elwood RK, Black W, Fitzgerald JM. *Clin Inves Med* 1996 Aug; 19(4):271-8.