

Frequency of dual tuberculosis/human immunodeficiency virus infection in patients presenting at tertiary care centers at Karachi

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Abstract

Objective: To determine the frequency of dual infection of Tuberculosis and Human Immunodeficiency Virus (HIV) and document the sexual practices of infected patients.

Design: Cross-sectional study.

Place and Duration of Study: Medical Unit-IV of Civil Hospital, Karachi, Pakistan, in collaboration with Sindh AIDS Control Program at Services Hospital, Karachi, from January 2003 to December 2004.

Patients and Methods: Patients were recruited in the study at both centers and tested for both HIV and TB if any one disease was identified. Diagnosis of TB was based on positive sputum AFB smear / caseous granulomatous lesion on histopathology. Diagnosis of HIV was based on positive anti-HIV serology by LISA technique. A questionnaire was also administered to all the study participants regarding demographics, sexual practices, blood transfusion and intravenous drug abuse.

Results: A total of 196 patients of HIV and TB were screened for the presence of dual infection (TB/HIV). Dual infection was present in 38 (19.39%) of patients. Out of 126 patients of HIV, evidence of TB was detected in 38 (30.16%). During the same duration, 70 patients of tuberculosis were screened for HIV and none was tested positive for HIV. History of illicit sexual relationship was found in 121 (96.03%) patients and 5 of these were homosexuals.

Conclusion: Dual infection was present in patients of HIV with TB but vice versa was not documented in this study.

Keywords: HIV. AIDS. TB. Tuberculosis. Human immunodeficiency virus.

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Introduction

Globally, tuberculosis (TB) is becoming a leading cause of HIV-related morbidity and mortality. In developing countries, HIV-infected people run 10% annual risk of developing TB.¹ At least one in three people with HIV are likely to develop TB.² HIV fuels the TB epidemic, since it promotes progression to active TB in people with mycobacterium tuberculosis infections, either acquired recently or in the past.¹ Increased risk of TB is present across the entire spectrum of immunodeficiency. The implication for TB control in high HIV prevalence populations is that prevention of HIV is crucial to control TB.³ HIV-related TB can occur at any stage.¹ The risk of death in HIV infected patients with TB has been reported to be twice that in HIV infected patients without TB independent of the CD4 cell count.⁵

Pakistan has been ranked sixth by WHO in terms of the estimated number of TB cases. The South East Asian statistics for TB per 100,000 population reported the incidence at 182, smear positive cases at 81, prevalence at 304 and mortality at 33.⁶ HIV is now increasingly being documented in patients suffering from TB in various parts of the world including neighboring India.⁷⁻¹⁰ Pakistan has a very strong private health sector, particularly in the major cities, and it is estimated that approximately 80% of TB patients, seeking treatment, initially report to private medical practitioners for their diagnosis and treatment.¹¹

HIV in Pakistan is on the rise. According to the UNAIDS report on Global AIDS Epidemic 2006, there are 85,000 cases of HIV/AIDS in Pakistan. Among them 84,000 are more than 15 years of age and 14,000 are adult females. The report also states that there were 3000 deaths related to HIV/AIDS in the year 2005.¹² The prevalence of dual infection of TB/HIV is not reported from Pakistan. The purpose of this study was to document the frequency of dual infection of TB/HIV and sexual behavior in infected persons.

Patients and Methods

This cross-sectional study was conducted at Medical

Unit IV, Civil Hospital, a tertiary care teaching hospital in Karachi, Pakistan, in collaboration with Sindh AIDS Control Program from January 2003 to December 2004. Patients were recruited in the study at both centers. Patients presenting with tuberculosis were enrolled at medical unit of tertiary care teaching hospital (CHK) and allocated to group-A; while patients with HIV were enrolled at the Sindh AIDS Control Program at Services Hospital, Karachi and allocated to group-B. Informed consent was obtained from the study participants and counseling for HIV and TB was done before subjecting the patients for further testing. Exclusion criteria included those unwilling to participate and patients less than 16 years of age. Investigations carried out in all patients included complete blood counts (CBC), ESR, sputum for AFB smear, anti HIV-I, anti HIV-II, chest X-ray and in selected cases ultrasound, CT scan, MRI and biopsy with tissue histopathology, if indicated. CBC was done on Sysmex auto-analyzer, AFB smear was reported after Ziehl-Neelsen staining by microbiologist, tissue histopathology by histopathologist and chest X-rays were reported by radiologist. HIV-antibody tests were carried out according to WHO and national HIV testing guidelines at referral laboratory of Sindh Aids Control Program. All samples were initially tested for HIV-I and II on Dade Behring (EIA) kit (WHO listed) on multiscan MS system. All reactive samples were further tested on Organon EIA plus Abbot-determine (ICT method) kit as a part of protocol based on WHO guidelines. All reactive samples were further tested on western blot assay (Gen lab kit), which confirms HIV-I infection. All HIV positive patients were subjected to chest X-rays and sputum for AFB smear testing. Three morning fasting sputum specimen were collected. Those who were not producing sputum were nebulized with saline to get the required sample. Patients having lymphadenopathy were subjected to fine needle aspiration cytology/excision biopsy.

A questionnaire was also administered to all the study participants. It collected information regarding demographics, sexual behavioral characteristics, blood transfusion and intravenous (IV) drug abuse.

Frequency of patients positive to both TB and HIV was estimated from the total number of patients enrolled. Percentages were calculated for ethnic, sexual practices and drugs. Mean \pm standard deviation were calculated for age. As no comparative analysis was done, p-values were not calculated.

Results

A total of 196 patients of HIV and TB were screened for

the presence of dual infection of TB/HIV during the study period. Dual infection was present in 38 (19.39%) of patients (Figure-1).

During the study period, 126 patients of HIV were detected at Sindh AIDS Control Program and all of them were screened for tuberculosis. Mean age of these patients was 36.8 ± 6.4 years. Ethnic distribution of these patients was Balochi 50 (39.68%), Sindhi 20 (15.87%), Urdu-speaking 25 (19.84%), Punjabi 15 (11.90%) and Pathan 16 (17.70%) (Figure-2). Evidence of TB was

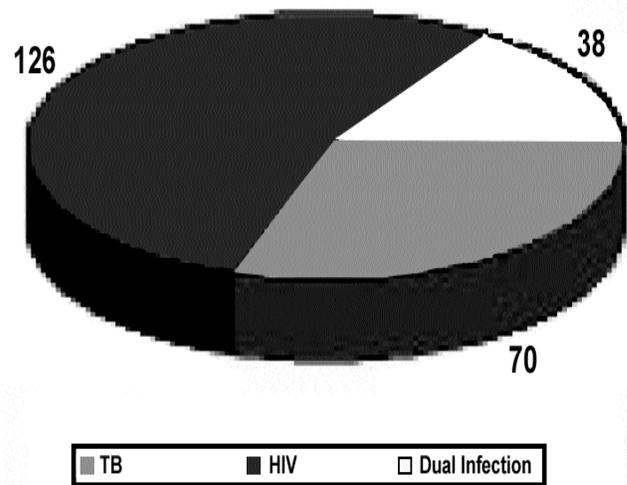


Figure-1: Frequency of TB and HIV.

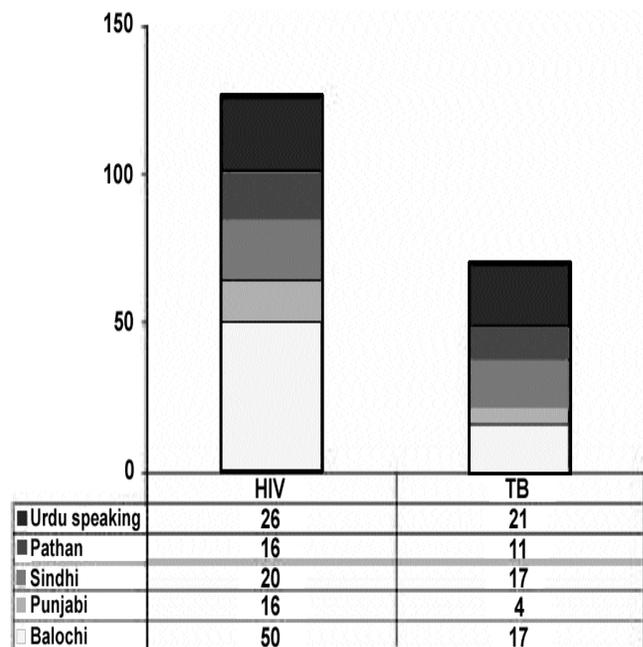


Figure-2: Ethnic distribution of HIV and TB patients.

detected in 38 (30.16%) patients. Eighty seven (69.04%) patients were married.

All patients were not aware about the mode of transmission of HIV before acquiring the disease. History of needle sharing for drug was present in 5 (3.97%) patients. One hundred and twenty (95.24%) had acquired the infection out of Pakistan and all of them were working in Gulf countries. They were deported when their HIV status was checked at the time of renewal of visa. None of these patients gave history of blood transfusion.

For the same duration, 70 patients of tuberculosis presented at medical unit and were screened for HIV. None of the patients tested positive for HIV. The mean age of these patients was 30.6 ± 11.3 years. These included 58 (82.86%) males and 12 (17.14%) females. Among this group, 56 (80%) patients were married. Ethnic segregation in this group was 21 (30%) Urdu speaking, 17 (24.29%) Balochi, 17 (24.29%) Sindhi, 11 (15.71%) Pathan and 4 (5.71%) Punjabi (Figure-2). Thirty nine (55.71%) were uneducated and belonged to labor class whereas remaining had studied from 10-12 classes.

These patients were also questioned for the risky behaviors which were negligible. Only 3 married patients gave history of ever having sex out of wedlock that too not with any high risk group. There was no IV drug user in this group of patients. Only 2 patients had history of blood transfusion.

Discussion

While TB is highly prevalent in South East Asia including Pakistan, it is common among HIV infected patients also.^{9,13} It is responsible for one-third of all the AIDS-related deaths in developing countries.¹³ The present study showed about 30% of HIV patients found were suffering from TB on screening. This was in comparison to 25% by Indian author and 24% in Cambodia. These studies all support the WHO recommendations of screening HIV patients for tuberculosis before initiation of Highly Active Anti-Retroviral Therapy (HART).¹⁶

Many parts of the world have witnessed high prevalence of HIV in patients with TB.¹⁴ Due to this fact some countries have started screening for HIV in all the immigrants with TB.¹⁵ In countries with high HIV prevalence, TB patients need testing for HIV co-infection for the potential benefit of early diagnosis.¹⁷ However, absence of HIV infection in patients of TB in our study does not support this recommendation for implementation in our area at present. In the African region where HIV prevalence is very high and the

prevalence of TB has also been found quite high, ranging between 40-50%.^{18,19} In developed countries where TB had become a problem of only immigrant population, it has re-emerged as a result of HIV emergence and is rapidly becoming common.²⁰

HIV is still restricted to high risk groups in Pakistan. The infection is rapidly increasing among injection drug users (IDUs) in Sindh as well as other parts of the country.¹⁰ The infection has not yet gained a solid place among the general population. However, TB has a stronghold throughout the country. The implication for TB control in high HIV prevalence populations is that prevention of HIV is crucial to control TB.³

The implications for HIV/AIDS control programmers are substantial as TB has now become an integral part of HIV/AIDS care.^{3,4} However, so far, TB and HIV control programs have largely pursued separate courses. It is necessary to improve the joint support of TB and HIV programs at Primary Health Care (PHC) level, in responding effectively to the needs of people infected with HIV.⁴

The study was limited to a small number of cases, however, in the absence of local data this could be used as a baseline and well-designed epidemiological studies can be conducted in future.

Based on the findings of the current study, all newly diagnosed HIV cases are preferably assessed for TB as a baseline and all HIV cases with fever and cough must be evaluated for tuberculosis. In addition, TB patients with high risk behaviors (like sexual promiscuity, homosexuals and IV drug users) also need to be tested for HIV status.

Conclusion

Dual TB/HIV infection was present in patients of HIV with TB super infection but vice versa was not documented in this study. Screening for HIV in tuberculosis patients without high risk behavior is not mandatory in our region.

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