

Prevalence of Tuberculosis among HIV Patients in Jeddah, Saudi Arabia

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ABSTRACT

Background:

Tuberculosis (TB) is the commonest infection that has been reported in HIV/AIDS patients in developing countries. This cross sectional study has been conducted in the chest clinic, King Abdulaziz Hospital and Oncology Center to evaluate the prevalence of TB among these patients in Saudi Arabia.

Methods: across sectional survey has been conducted in the City of Jeddah, Chest Department, King Abdul-Aziz Hospital and Oncology Center of total 172 HIV positive patients.

Conclusion: we have found that the majority of HIV/AIDS patients had tuberculosis and the rest of them had a high susceptibility to get it. Radiograph has also TB findings .TB can occur at any stage of CD4+T cells depletion.

Keywords: Tuberculosis , HIV ,Patients , Saudi Arabia

INTRODUCTION

Tuberculosis (TB) is the commonest opportunistic infection and the number one cause of death in HIV patients in developing countries, and accounts for about 40% of all manifestations seen in HIV patients ¹. About 25% to 65% of patients with HIV/AIDS have tuberculosis of any organ and tuberculosis accounts for about 13% of all HIV related deaths worldwide ^[2, 3, 4, 5, 6]. While tuberculosis prevalence has declined by more than 20% worldwide, the rates in Africa have tripled since 1990 in countries with high HIV prevalence and are still rising across the continent at 3–4% per year⁷. Between 2015 and 2016, a 20% increase of tuberculosis cases was reported in countries severely affected by HIV/AIDS in Saudi Arabia ⁸.

The major high risk groups included heterosexually promiscuous, intravenous drug abusers and blood donors⁹. But, there is very little information on HIV seropositivity among tuberculosis patients in India. It has been suggested that tuberculosis and gastro-intestinal diseases might increase in seropositive individuals and vice versa¹⁰. Tuberculosis often appears before other opportunistic infections

occur in persons infected with HIV¹¹. Also the risk of progressing from latent to active TB is

estimated to be between 26 and 31 times greater in people living with HIV than among those without HIV infection¹². This also means that they may become infectious and pass TB on to someone else, more quickly than would otherwise happen. Overall it is considered that the lifetime risk for HIV negative people of progressing from latent to active TB is about 5-10%, whereas for HIV positive people this same figure is the annual risk¹³. In 2014 there were 9.6 million new cases of TB, of which 1.2 million were among people living with HIV¹².

METHODS

Study setting: the study was conducted in the City of Jeddah, Chest Department at King Abdul-Aziz Hospital and Oncology Center.

Study design: a cross-sectional study of among Saudi patients.

Variables: The dependent variable in this study were obtained from total 172 HIV positive patients who were attended at antiretroviral therapy (ART) clinic, having < 350/μl CD4

count and receiving ART treatment during study period, were included in the study.

Data collection: data has been conducted between July 2015 and May 2016. A predesigned and pretested questionnaire was used to collect data on socio-demographic profile. Blood samples of these subjects were tested for HIV infection using highly specific enzyme-linked immunosorbent assay (ELISA) or Western Blot techniques. All the patients, irrespective of whether they had signs and symptoms of chest infection, were screened for pulmonary TB by chest X-ray, and subsequently by repeated microscopic examination of sputum for acid fast bacilli (AFB) using standard technique. Those individuals who were positive for AFB in their sputum had received standard directly observed therapy short-course as per revised national tuberculosis control program of the Government of Saudi Arabia.

RESULTS

As shown in table (1) A total of 172 HIV/AIDS patients were included in the study. The mean age of the study subjects were 37, SD 10.2. Twenty (8.6%) of all patients enrolled had tuberculosis, and thirty six (15.4%) of them had a history of tuberculosis in the past 5 years. One (5%) of the tuberculosis/HIV coinfecting patients and thirty five (16.4%) of the HIV positive/tuberculosis negative patients had a history of previous tuberculosis within the past five years. These patients with previous history of tuberculosis were diagnosed to have HIV when they were attending the tuberculosis clinic. One hundred and fifty (64.4%) were on ARV while 83 (35.6%) were on regular follow up. Patients on regular follow up are those who are not yet eligible for antiretroviral drug. These patients usually attend the clinic every four to six month for monitoring the progression of the HIV infection. It was observed from that, out of the 172 (17%) HIV/TB co-infection patients, 59 (34.30%) were in the age group of 30-40 years, followed by 44 (25.38%) in the age group of 40-50 years, and only 6 (3.40%) in the age group of less than 20 years. The mean age of the patients was 38.1 ± 3.2 years. There were 87 (50.58%) males and 85 (48.42%) females. As per the modified BG Prasad classification, most of the patients 71 (41.28%) belonged to upper middle

class followed by 65 (37.79%) lower middle class; while only 9 (5.23%) from upper class. With more than half (63.95%) of the study population were married, while (31.40%) either divorced/widow or separated from their family. Education level of the study population indicated that 46 (26.74%) were illiterates and 87 (50.58%), 22 (12.79%), and 10 (5.81%) had education levels of secondary, primary, and higher secondary, respectively. Only 7 (4.07%) were graduates. Occupation of the study population of HIV/TB co-infection showed that (42.44%) were laborers, followed by (29.65%) was farmers and (15.11%) were driver.

DISCUSSION

We have found high prevalence of tuberculosis disease among HIV/AIDS patients attending care and treatment in this setting. A study done in King Abdulaziz Hospital had found a prevalence of 15% in patients attending HIV care and treatment clinic¹⁴. The prevalence in the current study was 8.5% and was lower when compared with the study done in king Abdulaziz Hospital. The difference between these two studies can be explained by the fact that king Abdulaziz Hospital is urban and contributes about 24% of all tuberculosis cases in Tanzania, while the rural area where we did our study contributes less than 2%¹⁵. Patients with low immunity due to HIV are more likely to acquire tuberculosis in an area with high tuberculosis prevalence. Also, the prevalence of HIV in king Abdulaziz Hospital was higher than the national average of 7%¹⁷⁻¹⁸ and higher than the prevalence of 2% for the area where we did our study¹⁶. This means that there were relatively more HIV patients who were susceptible to tuberculosis in king Abdulaziz Hospital.

In developing countries, TB is one of the most common life-threatening infections among the persons living with HIV/AIDS. An estimate shows that around 5.1 million people are infected with HIV and about half of these cases are co-infected with tuberculosis¹⁹. In India, approximately 200 000 of these HIV-infected persons develop active TB each year²⁰. Incidence of HIV/TB co-infection was reported to be very high (50%) in sub-Saharan Africa compared to that in Asia¹⁶. The rates of HIV/TB

co-infection have been reported to vary in different regions of India. It was found to be between 0.4% and 20.1% in north India²². However, the incidence was 3.2% in 1991, which increased to 20.1% in 1996 in south India²³.

This study showed that the prevalence of HIV/TB co-infection was 17% among HIV positive patients who attended the ART clinic in western Maharashtra. This prevalence of HIV/TB co-infection is different from the national figure (60.30%)²⁴, but almost similar (27.3%) to that of another study done by Dev *et al.*,²⁵ in Kolkata.

Low CD4 cells in HIV-infected persons indicates severely depressed immunity that makes them susceptible to fresh TB infection or reactivation of latent infection and rapid degradation of clinical condition. It has already been established that TB attributed to a six-fold to seven-fold increase of viral load in HIV positive population¹⁷. Unlike cryptococcal meningitis or toxoplasmosis, which occur at very low CD4 counts, TB is unique in that it can occur over a wide range of CD4 counts, although it is more frequent at CD4 counts < 300 cells/ μ l. According to an estimate of World Health Organization, TB has become one of the leading causes of death among HIV-infected persons¹⁸.

CONCLUSION

Since the increase in HIV infection rate leads to increase in tuberculosis disease, there is need to re-examine the strategies for their effective control. The development of programs with an integrated approach to inducing behavioral change and promoting use of condoms may reduce the infectivity of HIV transmitters and the susceptibility of HIV-exposed persons. The most important aspect of this control program is public awareness and good health education on how tuberculosis and HIV are transmitted.

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| Socio-economic character | | Number | Percentage |
|-----------------------------------|--------------------------|--------|------------|
| Age | Less than 20 | 6 | 3.40% |
| | 20-30 year | 63 | 36.63% |
| | 30-40 years | 59 | 34.30% |
| | 40-50 years | 44 | 25.38% |
| Gender | Male | 87 | 50.58% |
| | Female | 85 | 48.42% |
| Status | Married | 110 | 63.95% |
| | divorced/widow | 54 | 31.40% |
| | separated family | 8 | 4.65% |
| Education level | Illiterates | 46 | 26.75% |
| | Secondary | 87 | 50.58% |
| | Primary | 22 | 12.79% |
| | higher secondary | 10 | 5.81% |
| | graduates | 7 | 4.07% |
| Occupation | Laborers | 73 | 42.44% |
| | Farmers | 51 | 29.65% |
| | Driver | 26 | 15.11% |
| | Non-worker | 22 | 12.80% |
| History of TB | Positive history | 45 | 26.16% |
| | Past history | 36 | 20.93% |
| | coinfected patients | 1 | 0.58% |
| | highly susceptible to TB | 20 | 11.63% |
| | ARV | 150 | 87.21% |
| | Regular follow up | 22 | 12.79% |
| modified BG Prasad classification | Lower class | 27 | 15.69% |
| | upper middle class | 71 | 41.28% |
| | lower middle class | 65 | 37.79% |
| | upper class | 9 | 5.23% |

Table (1) socio-economic character