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Tuberculosis: A Major Cause for Hospitalization of HIV/AIDS Patients

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A great deal of attention has focused recently on co-infection with tuberculosis (TB) and human immunodeficiency virus HIV. The objective of this study was to determine the prevalence of tuberculosis among hospitalized HIV/AIDS patients. A cross-sectional study was conducted over a period of five years from April 2000 to May 2005. The study evaluated all hospitalized HIV/AIDS patients who were admitted to a University Hospital in Zahedan. After recording the demographic data and laboratory results, final diagnosis was recorded as the cause of admission. Then all data was analyzed. Twenty-eight cases (59.5%) were treated for tuberculosis. Nineteen cases had pulmonary tuberculosis. Out of patients with pulmonary tuberculosis, 12 cases (25.5%) had smear positive pulmonary TB. Nine cases had extrapulmonary tuberculosis. Nine patients were prisoners and Injection Drug Users (IDUs) and smear positive pulmonary TB was seen in four of them. Although, the incidence rate of extrapulmonary tuberculosis and smear negative pulmonary TB in HIV/AIDS patients is more than HIV negative patients, but the present study showed that in endemic area for tuberculosis the prevalence of pulmonary TB, especially smear positive pulmonary TB is still high.

Key words: HIV/AIDS, tuberculosis, co-infection, prevalence

INTRODUCTION

Tuberculosis (TB) and other mycobacterioses are well-recognized complications of immunosuppression. In the 1980s, the epidemic of human immunodeficiency virus (HIV) infection and its resulting immunosuppression in large numbers of persons have increased the incidence of mycobacterial diseases (Pitchenik *et al.*, 1988). Of particular public health concern, however, is the increasing number of persons with disease caused by M. tuberculosis (Pitchenik *et al.*, 1984; Pape *et al.*, 1993; Maayam *et al.*, 1985; Sunderam *et al.*, 1986). HIV infection appears to be an important risk factor for TB. Currently, about 42 million people are HIV-infected and almost one-third are also infected with TB (Anonymous, 2005). The dual epidemics of TB and HIV are particularly pervasive in Africa, where HIV has been the single most important factor contributing to the increasing incidence of TB over the last ten years; currently in many African countries more than 50% of patients with active TB disease are also HIV-positive (Pape *et al.*, 1993; Anonymous, 2005). The dual epidemics are also of growing concern in Asia, where two-thirds of TB-infected people live and where TB now accounts for 40% of AIDS deaths. Persons infected with both HIV and TB are 30 times more likely to progress to active TB disease (Anonymous, 2005, 1989). Recent studies have shown that infection with TB enhances replication of HIV and may accelerate the progression of HIV infection to AIDS (Anonymous, 1989, 2003). Fortunately, TB treatment for HIV-positive patients under DOTS is just as effective as it is for people who are HIV-negative (Anonymous, 2003). In addition, clinical trials have shown that prophylaxis using anti-TB drugs can prevent or decrease the likelihood of TB infection from progressing to active TB disease in an HIV-infected person, making it an important intervention for increasing the length and quality of life of HIV-infected people, with benefits to their families and communities (Anonymous, 2005, 2003). Many studies have been done on co-infection HIV/AIDS and TB in the world but there is a few studies about this co-infection in Iran, especially in Southeast of Iran. Southeast of Iran is an endemic area for tuberculosis and the annual incidence

rate for all kind of TB and smear positive pulmonary TB is 70 and 40 per 100.000, respectively (Moghtaderi and Alvi-Naini, 2003). On the other hand, unemploymentness, injection drug use, tattooing and increasing of travel to neighbour countries where the prevalence of HIV is high has led to increasing number of people with HIV/AIDS in this area (Sharifi-Mood *et al.*, 2006).

MATERIALS AND METHODS

In this cross-sectional study, over a period of five years from April 2000 to May 2005, we evaluated all hospitalized HIV/AIDS patients who, were admitted to infectious wards in Boo-Ali Hospital. Boo-Ali Hospital is a teaching hospital and referral center for infectious diseases located in Southeast of Iran that all patients with HIV/AIDS are admitted in this hospital. All patients were under the care of a single unit, department of infectious diseases. Decision to admit was taken by the treating physician and all patients were hospitalized for the evaluation and treatment of a suspected OIs or HIV-related disorders. All medical documents of patients with HIV/AIDS were evaluated. After recording the demographic data and laboratory results, final diagnosis was recorded as the cause of admission. Then all data were analyzed.

RESULTS

Out of 47 cases (42 men, 5 female; age range, 21-54 years) with HIV/AIDS, 28 cases (59.5%) were treated for tuberculosis. Among patients with TB, 19 cases had pulmonary tuberculosis. Out of patients with pulmonary tuberculosis, 12 cases (25.5%) had smear positive pulmonary TB. In fact, 67.8% of cases with pulmonary TB, had smear positive pulmonary tuberculosis. Three patients had millary TB. Pott's disease was seen in two cases and also two cases had tuberculosis pericarditis. Two cases had meningitis. Of patients with HIV/AIDS, 12 cases were prisoners and among prisoners, 9 cases were injection drug users (IDUs). Among prisoners who were IDUs, 4 cases had smear positive pulmonary TB and one case had smear negative pulmonary TB. All data has been shown in Table 1.

Table 1: Kinds of tuberculosis in HIV/AIDS patients according to staying in prison

TB form	Smear +PTB	Smear -PTB	Pericarditis	Spondylitis	Meningitis	Miliary	Total
Prisoner	4	2	0	0	1	1	8
Non-prisoner	8	5	2	2	1	2	20
Total	12	7	2	2	2	3	28

DISCUSSION

Present results showed that 59.5% of patients with HIV/AIDS were treated for tuberculosis and smear positive pulmonary TB was the most common manifestation of tuberculosis in our patients. Although, the extrapulmonary tuberculosis and smear negative pulmonary TB in HIV/AIDS patients are more than HIV negative patients, but in our research, the prevalence of all kinds of TB was similar to HIV negative patients. Evidence for an association between HIV infection and TB comes from several studies (Havlie and Barends, 1999; Anonymous, 1986, 1987; Wilkes *et al.*, 1988). In San Francisco, 29% of non-Asian adult TB patients 18-65 years of age were infected with HIV (Chaisson *et al.*, 1988). In Seattle, a combined 23% of black and white adult TB patients 20-50 years of age were HIV-infected (Nolan *et al.*, 1988). Of 279 HIV-infected methadone maintenance patients in New York City, 12 had history of TB; none of the 240 patients not infected with HIV had history of TB (Stoneburner *et al.*, 1987). In Kinshasa, Zaire, a study of 500 decedents who were serologically tested postmortem showed that 16% of HIV-infected persons and 2% of HIV-negative persons had TB diagnosed ante mortem by smear (Nelson *et al.*, 1988). In Florida, 10% of AIDS patients had history of TB (Anonymous, 1986a), in New York City, 5% of adult and adolescent AIDS patients (Havlie *et al.*, 1999), in Connecticut, 5% (Anonymous, 1987) and at a university hospital in New Jersey, 21% had a history of TB (Sunderam *et al.*, 1986). In San Juan, Puerto Rico, 11% of autopsied AIDS patients had TB (Devinathea *et al.*, 1988) and at a New York City hospital, 4% of autopsied AIDS patients had previously undiagnosed TB (Anonymous, 1987). An association between TB and AIDS is particularly striking among groups with a high prevalence of both tuberculous and HIV infections, e.g., intravenous-drug users (IVDUs) (Duncanson *et al.*, 1985) and Haitians (Pitchenik *et al.*, 1984; Pape *et al.*, 1993). In present study, 55.5% of HIV/AIDS patients who were prisoners and had a history of injection drug use, had active tuberculosis. However, HIV-related TB is not restricted to IVDUs (Pitchenik *et al.*, 1984; Pape *et al.*, 1993; Louie *et al.*, 1986). It has been reported in homosexual and bisexual men and sexual contacts of bisexual men and in one person with transfusion-associated AIDS (Louie *et al.*, 1986; Anonymous, 1986b). The diagnosis of TB usually precedes or coincides with the diagnosis of AIDS but may follow it (Pitchenik *et al.*, 1984; Anonymous, 1986a; Duncanson *et al.*, 1985). The clinical presentation of TB in an HIV-infected person may differ from that in persons with relatively normal cellular immunity who develop reactivation TB. Apical pulmonary disease with cavitation, a classic finding in immunologically normal

persons, is less common. Patients may present with infiltrates in any lung zone, often associated with mediastinal and/or hilar lymphadenopathy (Pitchenik *et al.*, 1987). Two-third of our patients had infiltration in more than one lung zone and about one-half of patients with smear positive pulmonary TB had cavitation in right or left apical zone. Extrapulmonary disease occurs in 40%-75% of patients, often in the presence of pulmonary disease (Pitchenik *et al.*, 1984; Sunderam *et al.*, 1986; Anonymous, 1986a). Lymphatic and hematogenous TB are especially common among persons with HIV infection (Pitchenik *et al.*, 1984; Sunderam *et al.*, 1986). Central Nervous System (CNS) involvement, including brain abscesses, has been reported (Bishburg *et al.*, 1986) and may be especially difficult to diagnose when it occurs in conjunction with other opportunistic CNS infections such as toxoplasmosis (Fischl *et al.*, 1985). In present study, unlike other studies, 67.8% of HIV/AIDS patients who were treated for TB had pulmonary TB and more than half had smear positive pulmonary tuberculosis. According to our results, prisoners who were injection drug users were more at risk for occurrence of TB and there was a significant relation between staying in prison and prevalence of pulmonary TB especially smear positive pulmonary TB ($p < 0.05$).

CONCLUSIONS

In endemic area for tuberculosis the prevalence of pulmonary TB, especially smear positive pulmonary TB is still high. Co-infection with TB can complicate HIV treatment. Whenever possible, the care of people with TB/HIV co-infection should be managed by a doctor who has experience with both diseases.

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