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The Effect of One Year INH Prophylaxis in Reduction of Clinical TB in HIV-Infected Injecting Drug User Males

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ABSTRACT

***Background**: Due to increased prevalence of tuberculosis among HIV-infected patients, INH (Isoniazid) chemoprophylaxis has a major impact on the development of clinical tuberculosis.*

***Materials and Methods**: For the evaluation of INH effect on prevention, we used INH, 300 mg daily for 115 available TST (tuberculin skin test) positive HIV-infected patients for twelve months.*

***Results**: During three-year follow up, only twelve patients developed tuberculosis which was significantly lower than minimum estimated rate among these patients (>10% per year).*

***Conclusion**: We conclude that INH prophylaxis was effective method to prevent clinical tuberculosis among TST positive HIV-infected patients.* **(Tanaffos 2003; 2(5): 57-61)**

***Key words**: Tuberculosis, HIV infection, Isoniazid, Prophylaxis*

INTRODUCTION

Recently Human Immunodeficiency Virus (HIV) infection has been one of the most important risk factors for the development of Mycobacterium Tuberculosis infection toward active TB. (1) The rate of disease progression to HIV infected patients ranges between 1.6 and 9.7 per 100 person – year in PPD positive cases (2-5). Isoniazid (INH) has been highly effective among HIV negative persons at curtailing the progression to clinically active TB (6,7); also in HIV-infected cases, INH prophylaxis reduces this rate (2,4,8,9). In the study from Haiti, 12-month of INH preventive chemotherapy(IPT) was significantly protective (10). We studied the efficacy of 12-month INH prophylaxis in HIV infected cases attending voluntarily to HIV/STD care center in Kermanshah City (Iran) from October 1997 to December 2001.

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MATERIALS AND METHODS

In this prospective study, 290 HIV positive cases identified in prison were tested with tuberculin skin test (TST) from October 1, 1997 to April 1, 1998. The patients were classified as TST positive if PPD was ≥ 5mm, and TST Negative, if PPD was <5mm. After excluding active TB patients, all TST positive cases received INH preventive chemotherapy (300mg/day) for 12 months (recommended regimen

of WHO) (11). During the residency in prison and after freedom, they were followed up in HIV/STD care center for more than three years. TB incidence was calculated as the number of confirmed TB cases occurring during the follow up period expected as cases/100 py (person/year).

Based on HIV/AIDS surveillance system in Kermanshah, all HIV cases are submitted to each health center or public clinic, specially TB center, around the province, and referred to our HIV center. Furthermore, the manager of TB center is present every afternoon in our center, so it is rare that those 91 HIV cases who had not submitted to our center have had active TB; however, we excluded them. The main reason of death in the HIV-infected cases was suicide (21), and none of them has died due to clinical TB; however, we excluded them.

The efficacy of preventive therapy among TST – positive patients was measured as a relative risk based on TB incidence in patients who took INH prophylaxis. The statistical method was Chi-Square Test.

RESULTS

In this study, all HIV positive cases were male who were injecting drug users (IDUs). Of 290 HIV positive males tested with TST, 255 cases (86.2%) had PPD >5mm. The median age was 37 years. The five cases of them had the history of previous clinical TB, 4 cases had active TB at first visit and treated with six months regimen. 246 cases (83.1%) did not have any evidence of clinically active TB, and all of them received INH preventive chemotherapy (IPT) for 12 months. During three-year follow up, 40 cases (16.5%) died and 94 cases (39.4%) did not submit, so these groups and the patients with validated history of TB or current TB were excluded. The remaining 115 cases (44.5%) were evaluated completely. Four out of 115 (3.47%) HIV-infected patients with positive TST, developed to active TB in each year after finishing INH preventive chemotherapy during the three-year follow up period. Eight cases of them (66.7%) were smear positive and 3(25%) were smear negative for pulmonary tuberculosis; furthermore, one had extra pulmonary TB (liver involvement) (table 1). Table 2 shows incidence of clinical TB in these patients by age group.

Table 1. Pattern of clinical TB in HIV cases received INH prophylaxis

TB	No (%)
Pulmonary. Smear positive	8 (66.7%)
Pulmonary. Smear negative	3 (25%)
Extrapulmonary	1 (8.3%)
Total	12 (100%)

Table 2. Incidence of clinical TB in HIV cases received INH prophylaxis by age group

Age groups	No (%)
<20	0 (0%)
20-40	8 (66.7%)
>40	4 (33.3%)
Total	12 (100%)

DISCUSSION

In this study the prevalence of Mycobacterium Tuberculosis infection in IDU/HIV infected males was very high (86.2%). This rate is more than the estimated number of general population (12%) and HIV-infected persons (23%) in 15-49 years of age group in Eastern Mediterranean (13). This high rate may be due to the fact that all the cases were evaluated in the prison where the close contact and spreading of TB were more common. According to a study, the prevalence of active TB in TST-Positive HIV patients is 7.9/100 py (person/year) without INH prophylaxis (14). INH chemoprophylaxis in two large randomized, placebo- controlled series afforded 60% to 90% protection (6,7). In the present study,

the incidence of clinically active TB was 3.47 /100 py after 12 months INH preventive chemotherapy. In one study from Haiti on 58 HIV positive cases, this rate was 1.7 /100 py (10), in the Multi-site of Gordin (15), 1.2 /100 py, and in Spain (16), 1.6 /100 py.

One reason of this difference is the high prevalence (86.2 %) of Mycobacterium Tuberculosis infection in our HIV patients versus 53.3% in Haiti study in which without INH preventive chemotherapy the prevalence of active TB was 10/100 py (10). In other study in Kermanshah, the incidence of clinical TB in HIV-infected cases without INH prophylaxis is 8.04%. (33 patients out of 416 HIV-infected cases) (22). According to the results, we conclude that after 12 months of INH preventive chemotherapy, only 3.47/100 py had active TB, so appropriate prophylaxis reduces the incidence rate of clinical TB and has the important effect on prevention of active TB which is recommended by World Health Organization, too (17). If we consider the estimated rate of active tuberculosis in the absence of INH prophylaxis as the same observed by Kermanshah study (8.04%), we expect to have at least about 27 cases of clinical tuberculosis during a three-year period. In this study, the success rate of INH prophylaxis in reducing the number of clinical tuberculosis is about 55% (27 cases versus 12 cases). Due to TB spread in prison, some of TB cases may have been re-infected, and this status increased the clinical TB cases. On the other hand, INH preventive chemotherapy given to TST positive HIV-infected patients both increases life expectancy and reduces medical costs (18). INH prophylaxis reduced the number of smear positive pulmonary tuberculosis from 80.9% to 66.7% which mean that this strategy not only is effective in reduction of total number of clinical tuberculosis but also diminishes the highly contagious form of disease which deserve social consideration. The spread of HIV-infection epidemic is new in Iran, in Kermanshah the first HIV-infected case was diagnosed in1996; moreover, before 1995, the results of the sentinel sine in the prisons of Kermanshah were negative, so most of the HIV cases in our study were in early phase of HIV infection, and the effect of AIDS phase on presentation of TB in these HIV-infected cases was rare. The efficacy of INH prophylaxis was not affected by age factor as the rate of active tuberculosis was 66.7% in the 20 – 40 years age group who received INH chemo prophylaxis compared to 64.4% of the same age in the patients not receiving prophylaxis (19). By and large, INH chemoprophylaxis provides protection against both endogenous reactivation and exogenous re-infection of Mycobacterium Tuberculosis (20). We recommend other studies, evaluating the efficacy of six-month INH prophylaxis and two drugs prophylaxis regimens in HIV-infected patients in our country.

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