Spectrum of clinical disease in a series of hospitalized HIV–infected patients from southeast of Iran

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ABSTRACT

Objectives: To determine the pattern of opportunistic infections (OIs) and non-infectious opportunistic diseases in hospitalized HIV-infected patients in Zahedan, southeast of Iran.

Methods: We retrospectively reviewed the records of 52 HIV-infected patients (47 male, 5 female; age range, 21-54 years) who were admitted to Boo-Ali Hospital, Zahedan, Iran for evaluation and management of an HIV-related disorders from April 2000 to December 2005.

Results: Tuberculosis (TB) was the most common opportunistic infections (53.8%) followed by hepatitis C (11.5%), typhoid (9.6%), amebiasis (9.6%), candidal esophagitis (5.7%), acute bacterial pneumonia (3.8%), and cerebral toxoplasmosis (1.9 %). Most of the cases of TB were pulmonary (36.5%). Apart from other well-recognized OIs, 2 cases of HIV-associated lymphoma were encountered. Only 12 patients (23.07%) received antiretroviral therapy. Five patients (9.6%) died during hospital stay due to tuberculosis (4 cases) and typhoid (1 case).

Conclusions: The findings show that opportunistic infections are common in HIV-infected patients in Zahedan, southeast of Iran. Tuberculosis remains the most common OIs and is the most common cause of death in these patients.

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Human immunodeficiency virus (HIV) weakens the immune system so that many opportunistic infections (OIs) like tuberculosis, hepatitis, bacterial infections, and others can develop.[1] In the 1980s, the epidemic of HIV infection and its resulting immunosuppression in large numbers of persons have increased the incidence of mycobacterial diseases, and other opportunistic infections and non-infectious opportunistic conditions.[2] The first case of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) in Iran (Tehran), was detected in 1987, in a patient with hemophilia who had received infective clotting factors.[3] Then, cases have been reported from all provinces of Iran. As per estimates, by the end of 2005, approximately 70,000 cases were infected with HIV.[4] Now, this infection has been observed in high-risk groups such as injection drug users (IDUs), patients with other sexually transmitted diseases, immigrants, patients with history of tattooing and prisoners.[5,6] It is well established that

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manifestations of AIDS are influenced by factors such as endemic infections and malnutrition that are widely prevalent in these regions. Conventional disease staging criteria, which were developed in western populations, may not hold well in these settings.[7] Added to this, resource constraints prohibit evaluation and decision-making based on cost and labor-intensive methods such as CD4+ cell counts and viral RNA load estimation. Timely initiation of prophylaxis for OIs and their prompt recognition and treatment are the only economically viable options.[7,8] Therefore, in this scenario, knowledge regarding the pattern of opportunistic infections will be useful. Though, the majority of HIV-infected population lives in developing countries, and literature on the spectrum of opportunistic diseases in HIV-infected patients from developing countries especially Iran, is sparse, we conducted this study to detect the frequency of various OIs and non-infectious opportunistic conditions in hospitalized HIV-infected patients, in Southeast of Iran.

Methods. We conducted a retrospective study of all HIV-infected patients who were admitted between April 2000 to December 2005 at the Infectious Diseases wards of Boo-Ali Hospital, Zahedan, Southeast of Iran, to determine the pattern of OIs and non-infectious opportunistic diseases in hospitalized HIV-infected patients. Boo-Ali Hospital is a teaching hospital and a 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. The decision to admit was taken by the treating physician, and all the patients were hospitalized for evaluation and treatment of a suspected OI or HIV-related disorder.

Diagnosis of HIV infection was carried out enzyme linked immunosorbent assay (ELISA) using Genscreen® Plus HIV Ag-Ab Kit (Biorad, France) and western-blot using HIV Blot 2.2 kit (Genelabs® Diagnostic, Singapore). All the patients who were referred to Boo-Ali Hospital as 'HIV-positive' underwent retesting. Apart from this, all patients who had a risk factor for HIV infection, and patients with clinical presentation suggestive of underlying immunosuppression, were offered HIV testing. Patients were evaluated using a predesigned instrument regarding the demographic characteristics, risk factors for HIV infection, presenting symptoms and the cause of admission. The patients were counseled and offered antiretroviral therapy, whenever indicated, but unfortunately, only 12 of our patients had continued the antiretroviral therapy. All patients were admitted to infectious wards due to co-infection and other opportunistic diseases, and upon the diagnosis of opportunistic infection and non-infectious opportunistic conditions in the hospital, the patients were treated. Frequencies of individual OIs and non-infectious opportunistic diseases are expressed as proportions (%).

Results. Out of 52 cases (47 men, 5 female; age range 21-54 years) with HIV/AIDS, 28 cases (53.8%) were treated for tuberculosis (TB). Twelve cases (25.5%) had smear positive pulmonary tuberculosis. Sixty-seven percent of cases with pulmonary TB had a smear positive pulmonary tuberculosis. In fact, tuberculosis was the most common opportunistic infections in hospitalized HIV-infected patients. Typhoid and amebiasis were the second cause for hospitalization of patients with HIV/AIDS. Cerebral toxoplasmosis was seen only in one case and was the less common opportunistic infection in our patients. Frequency of the different kinds of TB and the cause for hospitalization of HIV-infected patients is shown in

Table 1 - Kinds of tuberculosis in HIV/AIDs patients found among prison inmates.

Tuberculosis	Stay in prison		Total
	Positive	Negative	
Smear +PTB	4	8	**12**
Smear - PTB	2	5	**7**
Pericarditis	0	2	**2**
Pott's D	0	2	**2**
Meningitis	1	1	**2**
Miliary	1	2	**3**
Total	**8**	**20**	**28**

PTB - pulmonary tuberculosis

Table 2 - Frequency of infectious diseases during hospital stay of HIV/AIDS patients according to gender.

Disease	Gender		Total
	Male	Female	
Tuberculosis	26	2	**28**
Hepatitis C	5	1	**6**
Typhoid	4	1	**5**
Amebiasis	5	0	**5**
Esophagitis	2	1	**3**
Pneumonia	2	0	**2**
Cerebral toxo	1	0	**1**

Table 3 - Frequency of HIV/AIDs according to risk factors.

Risk factor	N (%)
Injection drug users	9 (17.3)
Immigration	5 (9.6)
Sexual	4 (7.7)
Tattoo	2 (3.9)
Prisoners	12 (23)

Tables 1 and 2. Injection drug use and having a history of sexual contact with multiple sexual partners were the most common risk factors in HIV/AIDS patients that were recorded in history of patients. Twelve cases were prisoners that 9 cases had a history of IDU and seven cases of prisoners were started using of injection drug in prison. Among prisoners who were IDUs, 4 cases had a smear positive pulmonary TB and one case had smear negative pulmonary TB. It is important to note that prison, in this region, is where HIV/AIDS is prevalent, as many prisoners are IDU's. **Table 3** shows risk factors for occurrence of HIV/AIDS in hospitalized HIV/AIDS patients.

Discussion. Opportunistic infections are the major cause of morbidity and mortality in patients with HIV infection. In resource-limited settings, knowledge regarding the prevalence of various OIs might aid in making decisions regarding empirical treatment and would help to prioritize limited resources.[7] In this regard, we studied the frequency of various opportunistic conditions in this series of 52 HIV-infected patients. Nearly two-third of these patients was from places other than Zahedan, especially from South of Sistan and Baluchistan province in Southeast of Iran, being referred by medical practitioners or approached on their own. In this region, HIV-infected patients are usually treated in a tertiary level centers, due to lack of expertise and facilities in primary and district level hospitals. This series comprises predominantly of patients from the South of Sistan and Baluchistan province (Saravan and Chahbahar 2 cities in the South of this province). Hence, the findings of the present study may not apply to southeast of Iran, as these cities are border cities and are neighbor with the countries, where prevalence of HIV/AIDS is high. Moreover, being a hospital based study, most of the patients were in the age group 21–54 years and males were predominantly affected. This is similar to Iran national level statistics in which, of the 11930 cases of HIV/AIDS reported to the National AIDS Control Organization, more than 70% of the cases were in the age group 20-49 years and 95.2% were males.[4] This section of the population is more affected as they are sexually more active, and the social structure is patriarchal. Unfortunately, these patients also happen to be in the economically most productive years of their lives. The male preponderance might have been due to the fact that in the existing social milieu, females do not seek medical care fearing ostracism and loss of family support. Interestingly, a large number of patients (32.7%) did not give a history of any of the known risk factors for the acquisition of HIV infection and homosexual practice was singularly not seen. For the same reason, despite a history of prior blood transfusion in 9.6% of patients, it may not be possible to ascribe causation; not all of these patients would have acquired HIV infection through blood transfusion. Injection drug users constituted 17.3% of the study group that was less common than has been observed in other parts of our province, previously.[9,10] After sexual route, having a history of IDU, is the second risk factor (19.6%) for occupation of HIV/AIDs in Sistan and Baluchistan Province, where IDU is widely prevalent.[10] Now, IDU is the most common risk factor for the occurrence of HIV infection in Iran (51.3%).[4] In our study, IDU was the most common risk factor in the hospitalized patients. Tuberculosis was very common in this series and was the most common OIs. Previous studies also confirmed the high prevalence of TB in HIV-infected individuals in Iran and other countries where TB is endemic.[11,12] Most of these cases of TB were pulmonary TB and despite that extrapulmonary TB is more prevalent in HIV/AIDS patients, but in our study extrapulmonary TB formed 32.1% of patients with TB. We previously reported the increased prevalence of co-infection HIV/AIDS with other infections in Southeast of Iran.[13] The cases of TB attributable to HIV are increasing, and have reached an alarming proportions in certain countries. Tuberculosis is the most common opportunistic infection in India. More than 80% of the persons who are diagnosed with HIV in India have one or more opportunistic infections.[14] In the United States of America, almost 26% of cases of TB are now attributable to HIV infection.[15] Although these figures are from countries where the incidence of TB has otherwise been low, it is found to be similar in countries where TB is endemic. Toxoplasmosis was seen only in one case, and there was no *Pneumocystis carinii Pneumonia* (PCP) seen. This is in sharp contrast with the western populations where PCP is the most common AIDS-defining illness.[16] The low prevalence of PCP in developing

countries is well known and the incidence is probably increasing.[17] We did not find similar study in other provinces of Iran but the frequencies of various OIs as observed in the present study are similar to those reported from India.[12,18] Kaposi's sarcoma, atypical mycobacterial infection and disseminated CMV disease were not seen, as has been observed by a study in south India.[14] It appears that, TB being an endemic infection in this population takes its toll before other less virulent pathogens could come into play. Development of TB might have afforded some protection against atypical mycobacterial disease.[19] It is also possible that TB masked the recognition of other OIs, which might have been present since it is well known that a large number of potentially fatal OIs are not diagnosed antemortem.[19,20] In Iran Kaposi's sarcoma occurring in the setting of HIV infection, and other immuno-compromised conditions are a rarity, though not undescribed.[13] As such, the prevalence of human herpes virus-8 (HHV-8) infection among the healthy population in Iran is low when compared with African nations, and this is also likely to be responsible for the rarity of Kaposi's sarcoma.[21] Only 2 cases of our patients were admitted for non-infectious opportunistic diseases (lymphoma). Also, we observed co-infection of HIV/AIDS with HCV and TB (3 cases) and HIV/AIDS with HCV and HBV (4 cases). Apart from the well-recognized OIs, infection unique to the local population namely, visceral leishmaniasis occurs in association with HIV and this has to be borne in mind but was no seen in our patients. Although, visceral leishmaniasis is very rare in this area of Iran. Overall in-hospital mortality in this series was low (9.6%) and more was due to advanced TB and is probably reflective of the advanced nature of disease at presentation. The proximate causes of death in these patients are OIs, which are amenable to effective treatment. Many of these patients were from poor socioeconomic group and were not able to afford for antiretroviral therapy. Cost constraints directly or indirectly, probably also resulted in poor compliance with scheduled follow-up visits. With coordination with National Center of HIV/AIDS Control, it is hoped that antiretroviral therapy will be within the reach for a large number of these patients, and also compliance is likely to become better.

In conclusion, opportunistic infections are an important cause of morbidity and mortality in people infected with HIV. A wide spectrum of OIs was seen in hospitalized patients with HIV/AIDS in Zahedan, Southeast of Iran. Tuberculosis is the most common opportunistic infection in this group of patients. Though uncommon, non-infectious opportunistic conditions also occur. Some patients suffer from more than one OIs. Tuberculosis is responsible of hospital mortality in these deaths, and whenever a definite diagnosis is not established quickly, empirical treatment should be considered. Such an approach is likely to improve immediate outcome in hospitalized patients with HIV/AIDS.

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