

*Full Length Research Paper*

# Prevalence of dermatologic manifestations among people living with HIV/AIDS in Imam Khomeini Hospital in Tehran, Iran

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Dermatological conditions are observed in an estimated 90% or more of all HIV infected people worldwide. Microbial infections, inflammatory conditions and neoplasms are the three main causes for the development of dermatological findings in HIV patients. A total of 276 HIV patients were examined by a dermatologist to identify skin, hair and nail pathologies. CD4 count was measured; Liver function test (LFT) and complete blood count (CBC) were also done. Skin biopsies were obtained and sent for pathological study. Analysis showed 90 (32.6%) of patients had at least one identifiable dermatological ailment. The most common dermatologic manifestations were dermatitis (22.3%), seborrheic dermatitis (13.8%), folliculitis (6.7%), dermatophytosis (6.7%), oral candidiasis (6.7%), warts (6.7%) and Herpes Zoster (3.6%). CD4 count was positively and significantly associated with occurrence of a dermatologic manifestation. Moreover, the type of antiretroviral drug was correlated with these manifestations. Due to high prevalence of skin diseases, severity of complications and overall influence on the patient's quality of life, considerations should be given to timely diagnosis and treatment of dermatologic complications among HIV/AIDS patients.

**Key words:** Dermatologic, HIV/AIDS, prevalence.

## INTRODUCTION

Skin, as the largest organ of the human body, plays a pivotal role in sustaining immunity by acting as a barrier to the outside world. This is especially relevant in immunocompromised patients. Therefore, dermatological manifestations of acquired immunodeficiency syndrome (AIDS) are important healthcare concerns in HIV infected patients (Kouznetsov and Kouznetsov, 2009). HIV infection may result in the development of various dermatological complications, some of which are consequences of superimposed opportunistic infections (Cook et al., 2009). To date, there have been several reports detailing the high frequency of dermatological manifestations in HIV infected patients. For example, in Taiwan, up to 70% of HIV patients develop

dermatological complications (Tzung et al., 2004). Similarly, studies in India and France revealed that dermatological manifestations among HIV patients can have prevalences as high as 96% and 65.3%, respectively (Tzung et al., 2004; Reynaud-Mendel et al., 1996). In fact, derma-tological conditions are observed in an estimated 90% or more of all HIV infected people worldwide (Sterling and Chaisson, 2005; Fauci and Lane, 2005; Wiwanitkit, 2004).

Colonization and subsequent invasion of the skin by various bacterial, viral, fungal, and parasitical agents spur infectious skin lesions, whereas non-infectious skin conditions mainly emerge from adverse drug reactions or certain inflammatory etiologies. Microbial infections, inflammatory conditions, and neoplasms are the three main causes for the development of dermatological findings in HIV patients. Among infections, viral and fungal pathologies are most common. Seborrheic dermatitis and Kaposi's sarcoma account for the most

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**Table 1.** Frequency of dermatologic manifestations among HIV/AIDS patients, n=90.

Dermatologic manifestation	N	%
Dermatitis	30	22.3
Seborrheic Dermatitis	18	13.8
Folliculitis	9	6.7
Dermatophytosis	9	6.7
Oral Candidiasis	9	6.7
Wart	9	6.7
Herpes Zoster	5	3.6
Acne Vulgaris	4	2.9
Pruritis	3	2.1
Urticaria	3	2.1
Psoriasis	3	2.1
Eczema	2	1.4
Melasma	2	1.4
Oral Aphthe	2	1.4

frequently observed conditions with inflammatory and neoplastic etiologies, respectively (Cook et al., 2009; Fauci and Lane, 2005).

Primary opportunistic infections of the skin and mucosa, malignancies, and certain systemic infections are of major significance in HIV infected patients. Viral skin infections (e.g., Herpes-Simplex and Varicella-Zoster), bacillary angiomatosis, and Kaposi's sarcoma are the most common dermatologic conditions among HIV patients (Puig and Pradinaud, 2003). Among frequently reported fungal infections, candidiasis is also a troublesome clinical syndrome. Other frequently observed dermatological conditions include seborrheic dermatitis, eosinophilic pustular folliculitis, and certain mild infections. Moreover, both severity and course of the dermatological symptoms seem to be associated with stage of the retroviral infection. For example, Kaposi's sarcoma is mostly observed in terminal stages of AIDS, while oral hairy leukoplakia, molluscum contagiosum, shingles, recurrent Herpes-Simplex infection and oral ulcers are frequently reported in the very first stages of HIV infection (Fauci and Lane, 2005).

Considering the evidently high prevalence of dermatological manifestations among HIV patients, this study is the first we know of to (a) evaluate the occurrence of dermatological manifestations in Iranian HIV patients in a clinical setting, and (b) examine the type of antiretroviral medications used by these patients.

## MATERIALS AND METHODS

From June 2007 to March 2008, a total of 276 HIV patients seen at the Triangular Clinic of Imam Khomeini Hospital in Tehran were randomly selected to participate in this study. HIV infection was confirmed by Western Blot test. All patients were examined by a dermatologist to identify possible skin, nail, and hair pathology. As part of the examination, surveys were completed by an expert

general physician in clinical research; survey items obtained demographic data and information about HIV/AIDS characteristics (e.g. risk factors of infection, transmission routes, drug use, and laboratory tests). Blood samples from patients were used in order to measure CD4 count, Complete Blood Count (CBC) and Liver Function Tests (LFT). Under the supervision of a dermatologist, tissue samples of skin biopsies were obtained and sent for pathological study at the Skin and Fungal Culture Research Center of Tehran University. Statistical analyses of our cross-sectional data were completed in SPSS version 11.0.

## RESULTS

Data from 276 HIV patients were included in our study, and 90 (32.6%) of these patients had at least one identifiable dermatological ailment. Fifty-five patients were female (19.9%) and 221 were male (80.1%). The mean age of the sample was 34.8 years ( $SD = \pm 8.49$ ). The most common transmission route was IV drug use (66.30%).

As presented in Table 1, common dermatologic manifestations were dermatitis (22.3%), seborrheic dermatitis (13.8%), folliculitis (6.7%), dermatophytosis (6.7%), oral candidiasis (6.7%), warts (6.7%) and Herpes Zoster (3.6%).

There was a significant difference in CD4 count between those with and without a dermatologic manifestation. The mean CD4 count in patients with dermatologic problems was 331 cell/ml. The mean CD4 count in dermatitis, folliculitis, candidiasis, wart and urticaria was 354, 253, 413, 340 and 156 cell/ml, respectively. Patients with relatively low CD4 counts reported a greater frequency of dermatologic manifestations. Table 2 shows the frequency of antiretroviral drugs used by patients.

There was also a significant association between the type of antiretroviral drugs used by patients and the frequency of dermatologic manifestations.

**Table 2.** Frequency of antiretroviral (ART) drug use by HIV/AIDS patients, N=276.

ART Drug	N	%
Lamivudine	143	51.8
Zidovudine	131	47.5
Nelfinavir	82	29.7
Efavirenz	40	14.5
Nevirapine	39	14.1
Stavudin	25	9.1
Kaletra	12	4.7
Abacavir	1	0.4
Atazanavir	1	0.4

## DISCUSSION

Our study revealed that skin disorders are prevalent among Iranian HIV-positive patients in a clinical setting. The prevalence of dermatological manifestations in our patients (32.6%) is considerably lower than studies performed in Tanzania (65.3%) (Repentigny et al., 2004), France (65.3%) (Reynaud-Mendel et al., 1996), Taiwan (91.4%) (Tzung et al., 2004) and India (96%) (Sud and Shanker, 2009); however it is higher than the rate in Sudan (13.3%) (El Nour, 2004). Our prevalence rate is closest to the reports in Thailand (34%) (Wiwanitkit, 2004). Dermatitis (22.3%) was the most prevalent condition among our HIV patients, whereas in the studies performed in Thailand and Taiwan, dermatitis was observed in 16.7% and 21% of all cases, respectively (Tzung, 2004; Wiwanitkit, 2004).

In some previous studies, candidiasis was the most common dermatological manifestation among HIV patients (Cook et al., 2009; Repentigny et al., 2004). Shingles was identified in almost 1.5% of our sample, which is comparable to the study performed in Thailand (Wiwanitkit, 2004). Additionally, xeroderma was evident in 1.4% of our sample, however, this skin disorder has been reported as one of the most common dermatological manifestations of HIV infected patients in Spain (Munoz-Perez et al., 1998). In another study of Sudanian patients, bacterial infection of the skin was the most prevalent condition (El Nour, 2004).

In France, it has been shown that Kaposi's sarcoma, hairy leukoplakia, xeroderma, and oral candidiasis are more frequent in patients with a CD4 count between 200-300 cells/ml (Reynaud-Mendel et al., 1996). In another study performed in Malaysia, dermatological manifestations were observed in 71.7% of patients in the terminal stages of HIV (Wang, 1999). In our study, 32% of our sample had CD4 levels less than 300 cells/ml. Not surprisingly, those patients in our study with low CD4 counts reported greater frequency and severity of dermatological conditions. This is likely due to a compromised immune system paralleling an inability to prevent skin infections. Moreover, patients with low CD4

levels reported more advanced stages of skin lesions.

An additional important finding in our study was the association between type of skin manifestation and anti-retroviral drug regimen. Previous research in Thailand found that the frequency of xeroderma, eczema and folliculitis were significantly lower among patients who had taken anti-retroviral medications (Maurer et al., 2004). In a study conducted in Italy, opportunistic infections of the skin were less common among patients who had taken anti-retroviral drugs (Torre et al., 2005). Krischer et al. (1998) speculated that the development of skin lesions among those with Kaposi's sarcoma is associated with treatment by anti-retroviral drugs.

However, an 11-month follow-up of these patients did not reveal further expansion of new lesions. Contrary to this notion, Hurni et al. (1997) reported that treatment by Lamivudine, Zidovudine and Saquinavir actually resulted in retreat and improvement of expanded lesions from molluscum contagiosum.

Dermatological complications of HIV/AIDS arise from a variety of conditions with various etiologies. Therefore, careful considerations should be given to timely diagnosis and prompt treatment of dermatological complications among HIV patients in Iran and across the globe. Besides the clinical difficulty in preventing and treating skin diseases, the skin also affects the patient's general appearance and their quality of life. The high prevalence of skin diseases, severity of complications, and overall influence on the patient's quality of life highlights the need for further investigation of the role of the immune system in dermatologic manifestations among HIV patients.

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