



CD4 Count: A Monitoring Tool in HIV

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Article ID: WMC003274

Article Type: Original Articles

Submitted on: 22-Apr-2012, 02:44:27 PM GMT **Published on:** 23-Apr-2012, 03:33:42 PM GMT

Article URL: http://www.webmedcentral.com/article_view/3274

Subject Categories: DERMATOLOGY

Keywords: HIV, CD4 count, Mucocutaneous manifestations, Candidiasis, Dermatophytosis, Seborrheic dermatitis

How to cite the article: Shashikumar BM, Harish MR, Hanumanthayya K, Bhagwat PV, Tophakhane R. CD4 Count: A Monitoring Tool in HIV. WebmedCentral DERMATOLOGY 2012;3(4):WMC003274

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Source(s) of Funding:

Nil

Competing Interests:

No conflict of interest

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Abstract

Background and objectives: Mucocutaneous manifestations are extremely common and varied in HIV infected patients. Their frequencies, pattern and associated factors have been shown to vary from region to region. The present study was done to know the overall prevalence of mucocutaneous manifestations and their relationships with CD4 count among HIV patients.

Methods: This cross sectional study was conducted for a period of one year at Dermatology department and ART centre, KIMS, Hubli. A total of 150 HIV seropositive patients with skin manifestations were included in the study after obtaining their informed consent. Detailed history, thorough physical examination, CD4 count and relevant investigations were done to confirm the mucocutaneous manifestations.

Results: Of the 150 HIV positives, mean age was 34.1 years and male to female ratio was 1.73:1. A total of 376 dermatoses were diagnosed with an average of 2.5 conditions per patient and a mean CD4 count was 228 cells/mm³. The commonest cutaneous manifestation was infections, especially fungal (34.7%). Oral candidiasis was the most common infectious condition (14%) with mean CD4 count of 159 cells/mm³. Increased prevalence of cutaneous manifestations was seen with lowering CD4 counts. Other common infectious conditions seen were staphylococcal skin infections (17.3%), dermatophytosis (12%), HSV (9.3%), HZ (7.3%), and scabies (10%). Seborrheic dermatitis was the most common non-infectious dermatoses (16.7%). Other non infectious dermatoses included PPE (14.7%), generalized xerosis (14%) and ichthyosis (6%). A correlation between the dermatologic manifestations and CD4 cell count was found.

Conclusion: Mucocutaneous lesions are useful clinical predictors of level of immunosuppression. Correlating CD4 counts to skin lesions could serve as a guide to start and monitor antiretroviral therapy.

Introduction

The HIV (Human Immunodeficiency Virus) pandemic has wreaked enormous financial, political, and health-related havoc.[1] HIV infection does not affect one

organ or one system, but practically affects all the tissues and organs of the human body. Skin is the most commonly affected organ. Mucocutaneous disorders are often the commonest indicator for initial HIV testing.[2] The incidence and severity of several common cutaneous diseases are increased in patients with HIV and this correlates in many instances with the absolute number of CD4 T-helper cells.[3] The dermatological complications of HIV and AIDS sheds light on both the immunopathological natural history of HIV infection and the etiology of common and rarer dermatoses that happens to be found with a higher incidence in HIV infected patients. Their occurrence emphasizes the importance of the skin as a dynamic immunological organ.[4] Some Indian authors have concluded that the pattern of mucocutaneous involvement in HIV might be different in Indian patients. This study has been taken up since the cutaneous manifestations and their incidence and prevalence in the Indian population has not been studied thoroughly.

Aims and objectives

To describe the various dermatological manifestations in HIV infected patients attending the department of Dermatology and ART centre, KIMS hospital, Hubli and to correlate the dermatological manifestations with CD4 count.

Methodology

The present study dealt with 150 HIV seropositive patients with skin manifestations selected from the patients attending Dermatology department and ART centre, KIMS, Hubli. Patients were examined with detailed history, physical examination with a special emphasis on cutaneous, mucosal and nail involvement. CD4 count was done in all patients. Also, Patients whose CD4 counts done within 3 weeks of examination were also recorded. Specific investigations like skin biopsy, culture and sensitivity for bacterial infections, Gram's stain, potassium hydroxide mount and fungal culture were done for the confirmation of diagnosis in doubtful situation. The statistical analysis was done using Chi-square test for non parametrical data and a Student T-test while comparing two groups of unequal variance.

Results

The total number of patients examined during the course of this study was 150. A total of 376 dermatoses were diagnosed with an average of 2.5 conditions per patient and a mean CD4 count of 228cells/mm³. This includes infectious, non-infectious, hair and nail changes, but more often the conditions coexisted. Among the 150 patients studied, 94 (62.7%) were male and 56 (37.3%) were female, age ranging between 4 to 65 years. Majority of the patients were in the age group of 31-40 years (49.3%) with the mean age being 34.1 years. Majority of male patients and only 6 out of 56 female were having multiple sex partners. Heterosexual route was the most common route of transmission seen in 136 (90.7%) followed by vertical in 12 (8%) cases. 2 (1.3%) were bisexuals. No patients of IVDU were observed in this study. Fever and weight loss were the common systemic symptoms with 42(28%) each, followed by cough in 21 (14%), generalized weakness in 10 (6.7%), diarrhea in 9 (6%), headache in 2(1.3%), and loss of bowel and bladder control, CSOM and weakness of limbs in to 1(0.7%) each. Generalized itching was the most common dermatological presenting symptom, seen in 60(40%) patients.

Various mucocutaneous manifestations observed in our study are shown in Illustration 1. The commonest cutaneous manifestation was infections, especially fungal (34.7%). Oral candidiasis was the most common infectious condition (14%) with mean CD4 count of 159cells/mm³. Among non infectious dermatoses, seborrheic dermatitis was seen in 25(16.7%) of patients. Generalized xerosis in 21(14%) patients, generalized ichthyosis in 9 (6%) patients and Pityriasis rosea and Psoriasis in a patient each. Majority of the Seborrheic dermatitis patients presented with diffuse involvement. 32(21.3%) patients had Pruritic papular dermatosis, of which 22(14.7%) had Pruritic papular eruptions and 5(3.3) patients had Insect bite reactions and Eosinophilic folliculitis each. Majority of the patients with PPE were on HAART. Most common ADR was Maculopapular rash, following the administration of Nevirapine, followed by Urticaria (4%) and SJS (2.7%).

Hair changes included diffuse alopecia (Scalp) seen in 11 (7.3%) patients, partial alopecia in 10(6.7%) and spontaneous straightening of hairs in 5 (3.3%) patients. All were predominant in patients with CD4 cell count < 200 cells/mm³. A total of 54 (36.1%) patients had nail changes of which bluish discoloration was the commonest, seen in 19(12.7) patients. Koilonychia

was observed in 13 (8.7), followed by longitudinal melanonychia in 9(6%), onychomycosis in 7 (4.7%) and nail dystrophy and subungual hypertrophy in 2 patients each. Of this 54 patients 37 had CD4 count <200 cells/mm³.

Discussion

Skin disorders are common manifestations of Human Immunodeficiency Virus (HIV) disease; and may be seen in 80% to 95% of HIV infected individuals.[5-8] In this study 96/150 (64%) of patients were having multiple cutaneous manifestations and average manifestation is 2.5 condition per patient. Tzung et al [9] reported an average of 2.2 conditions per patients in his study. Singh[10] et al reported an average of 2.35 conditions per patients with an average of 3.15 conditions in group IV (CDC classification) patients and 1.5 conditions in group II category. In present study average manifestations per patient was more in advanced immunosuppression.

Generalized itching was the most common dermatological symptom observed in 60(40%) patients. A study done by Uthayakumar et al [5] in 151 patient showed a similar prevalence of 43.3% and 56.7% between 2 groups.

Itching in HIV infected persons can be due to infectious causes (Dermatophytes, parasites, bacterial folliculitis) or noninfectious causes (Xerosis, Ichthyosis, exaggerated insect bites, eosinophilic folliculitis etc). Pruritus represents a hypersensitivity response to a variety of antigens in patients with HIV infection.[11]

Comparisons of present study with other studies is shown in Illustration 2

Conclusion

Skin is the most commonly affected organ in patients with HIV infection /AIDS. While some cutaneous findings are nearly exclusive to HIV seropositive individuals, many are found in the general population. However, HIV-infected individuals often have an increased prevalence or severity, atypical presentation, or difficulty with treatment of the disease.

The frequency of infections like oral candidiasis, candidal balanoposthitis, histoplasmosis and others were higher at lower CD4 count. Frequency of skin manifestations increased with fall of CD4 count. Pruritic papular dermatitis, hair changes like diffuse alopecia, straight hair, and hyperpigmentation (generalized as well as melanonychia) which are of late described in HIV infected persons were also noted

and found to be quite common. In resource crunched country like India, where only a limited number of patients have the means to do viral load estimation, the study of skin disease as a window to the level of immunocompromise gains importance. Correlating CD4 counts to skin lesions could serve as a guide to start and monitor antiretroviral therapy.

List of abbreviations

ADR- Adverse drug reaction
 AIDS- Acquired Immunodeficiency syndrome
 ART- Anti-retroviral therapy
 CSOM- Chronic suppurative otitis media
 HAART- Highly active anti retroviral therapy
 HIV- Human Immunodeficiency Virus
 HSV- Herpes simplex virus
 HZ- Herpes zoster
 IVDU- Intravenous drug use
 KOH- Potassium hydroxide
 PPE- Pruritic papular eruption

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Illustrations

Illustration 1

Table 1

Overview of dermatological manifestation in comparisons with CD4 count

Dermatologic manifestations	No. of patients	Percentage	Mean CD4 count	Standard deviation	Range
Viral infection	41	27.3	191.0	146.6	8-520
Bacterial i nfection	34	22.7	233.0	268.3	10-1249
Fungal infection	52	34.7	185.2	148.1	8-595
Oral Candidiasis	21	14.0	159.4	114.9	16-410
Onychomycosis	7	4.7	91.0	108.6	8-312

Parasitic infestation	18	12.0	244.0	313.8	12-1100
Seborrheic dermatitis	24	16.0	235.0	168.3	41-655
Xerosis	21	14.0	224.1	168.4	29-637
Papulo squamous diseases	56	37.3	235.0	168.3	21-655
Drug reaction	20	13.3	200.2	181.3	3-602

Illustration 2

Table 2

Comparisons of present study with other studies

Manifestation	Kumaraswamy et al ¹² (n=833)	Shobhana et al ¹³ (n=410)	Jing et al ¹⁴ (n=145)	Sharma et al ¹⁵ (n=100)	Present study (n=150)					
					CD4	%	CD4	%	CD4	%
Herpes zoster	11.2	176	6	198	3.4	89	19.4	218	7.3	239
Herpes genitalis	7.7	197	8	187	2.1	130	-	-	7.3	157
Genital warts	1.2	188	5	152	2.1	117	5.6	246	2	253
Molluscum contagiosum	1.3	277	4	205	2.1	13	2.8	330	4	219
Staphylococcus Skin infection	2.9	410	2	-	3.4	117	-	-	17.3	259

Dermatophytosis	8	178	13	220	9.7	70	8.3	272	12	212
Oral Candidiasis	45	197	36	98	36	54	19.4	105	14	159
Scabies	0.5	9	5	-	1.4	72	2.8	174	10	148
Seborrheic Dermatitis	-	-	4	240	21	37	30.6	333	16.7	257
Pruritic Papular Eruption	7.7	149	4	-	30	44	-	-	14.7	239
Adverse Drug Reaction	-	-	-	-	2.1	-	-	-	13.3	200

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