



CUTANEOUS MANIFESTATIONS OF HIV IN PEOPLE LIVING WITH HIV/AIDS AT TERTIARY CENTRE

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ABSTRACT

BACKGROUND-The study was conducted to describe systematic clinical manifestations among HIV in PLHA at tertiary care centre.

METHODOLOGY- This study was designed as cross sectional study at Department of Medicine, tertiary care centre. A total of 100 HIV infected patients were included detailed enquiry about presence of skin lesions along with CD4 cell count was obtained and entered in pretested questionnaire

RESULTS-The mean age of patients with HIV was 43.9 ± 10.2 years and Slight female preponderance was observed with male: female ratio of 0.89:1. Mean CD4 count was 243.2 ± 103.2 cells/mm³. Majority of patients had CD4 count in the range of less than 200 cells/mm³ (64%) Staphylococcal skin infections were the most common skin lesions observed in 34% patients. All the patients with cutaneous manifestations presented in present study had low CD4 cell count. However, no statistically significant association between CD4 count and cutaneous manifestations could be documented ($p > 0.05$).

CONCLUSION- Cutaneous manifestations are more prevalent in patients with lower CD4 counts and can also be observed with normal CD4 count levels amongst patients with HIV. Occurrence of cutaneous manifestations was higher in patients with lower CD4 count but the observed difference was not statistically significant.

KEYWORDS :

INTRODUCTION

According to World Health Organization, globally approximately 38 million people are estimated to be living with HIV infection (2019).^[1] The estimated prevalence of HIV (2017) among adults males and females in India range from 0.18 to 0.34% and 0.14 to 0.25% respectively.^[2] HIV virus is a lymphotropic human retrovirus which is transmitted via sexual contact, exposure to infect blood or blood products, or vertically from mother to foetus. Once infected, the person remains infected throughout life and disease continue to progress from primary infection to a state of immuno deficiency leading to opportunistic infections and finally to death.^[3] Introduction of highly active antiretroviral therapy has dramatically improved the course of HIV infection particularly by strengthening the immune system.^[4]

Cutaneous manifestations are frequently observed in HIV patients. They have played an important role in establishing diagnosis as well as in assessing clinical staging and severity of HIV infection. These manifestations have been correlated with CD4 count and stage of HIV/AIDS^[5] Cutaneous manifestations may be the first manifestation of HIV infection and approximately 90% of people infected with HIV may suffer from cutaneous disease during their illness.^[6] The cutaneous manifestations depend upon stage of HIV as depicted by cell CD4 count, antiretroviral therapy and pattern of infections. Though cutaneous disease in patients with HIV may manifest at any stage but the severity of cutaneous disease increase with advancing stage as the CD4 count decrease.^[6] Also patient with HIV may present with multiple cutaneous disease in severe cases, usually atypical lesions, refractory to standard therapy.^[7]

The spectrum of cutaneous disease among HIV patients include cutaneous infections, inflammatory, neoplastic, and secondary to highly active antiretroviral therapy (as immune restoration diseases).^[8] Common infectious diseases may include impetigo, scabies, and superficial fungal infections attributed to poor hygienic conditions, overcrowding, and poor access to health care.^[9,10] Though, there are no specific skin lesion which are caused by HIV, however, skin lesions associated with Kaposi sarcoma, eosinophilic folliculitis,

molluscum contagiosum, oral hairy leukoplakia, oral candidiasis, chronic ulcerating herpes simplex are strongly suggestive of underlying immunodeficiency disease most common being HIV/AIDS.^[11] Cutaneous disorders among HIV positive patients are more complicated, atypical and difficult to treat, thus, they are associated with significant discomfort and negatively affect patient's quality of life.^[12]

Previous literature has mainly focussed on distinctive clinical presentations such as Kaposi's sarcoma, oral hairy leukoplakia, and oral candidiasis. However, the findings on careful skin examination of HIV infected patients who present for primary care have received limited attention. The present study was conducted to describe cutaneous manifestations among PLHA and its association with CD4 counts.

METHODOLOGY

This study was conducted as a cross sectional study at Department of Medicine & ART Centre, Gandhi Medical College and Hamidia hospital for a period of two years i.e. from 1st June 2018 to 30th May 2020 among 100 HIV infected patients. All the patients diagnosed as HIV belonging to age range of > 18 years giving their written consent were included whereas severely ill patients with multiple co-morbid states were excluded from the study.

After obtaining ethical clearance from Institute's ethical committee, all the patients fulfilling inclusion criteria were enrolled. Detailed history regarding sociodemographic data, past or current evidence of infections, detailed drug history, detailed clinical examination and detailed examination of skin and cutaneous manifestations was done in bright light. Data regarding HIV, duration of disease, initial symptom/ presenting feature at diagnosis, history of weight loss, vomiting, diarrhea, dizziness and lethargy etc. Enquiry about CD4 cell count at diagnosis, CD4 cell count at initiation of HAART and the current CD4 cell count was also obtained.

STATISTICAL ANALYSIS

Data was compiled using Ms Excel and analysed using IBM SPSS software version 20. Data was grouped and expressed

as frequency and percentage whereas numerical data was expressed as mean and standard deviation. Chi square test was applied to assess the association of skin manifestations with CD4 counts. Difference in mean between two variables was calculated using unpaired t test. P value less than 0.05 was considered statistically significant.

RESULTS

A total of 100 patients with HIV were included with mean age of 43.9±10.2 years. Slight female preponderance was observed with male: female ratio of 0.89:1. Fever was documented in 5% patients whereas about 33% and 4% patients were observed to have pallor and lymphadenopathy on physical examination. Mean haemoglobin and mean leukocyte count in patients with HIV was 9.5±1.5 gm/dl and 7920±1750.7 per cu.mm respectively. Majority of the patients had haemoglobin levels and total leukocyte counts in the normal range.

Mean CD4 count was 243.2±103.2 cells/mm³. Majority of patients had CD4 count in the range of less than 200 cells/mm³ (64%). (Table 1)

Table 1 – Distribution according to Baseline variables

Baseline variables	Frequency (n=100)	Percentage
Age (years)	≤30	11
	31-40	26
	41-50	36
	>50	27
Gender	Male	47
	Female	53
Clinical features		
Temperature	Febrile	5
	Afebrile	95
Pallor	Present	33
	Absent	67
Lymphadenopathy	Present	4
	Absent	96
JVP	Raised	0
	Not raised	100
Investigations		
Hemoglobin	> 11	17
	10-10.9	28
	9-9.9	22
	7-8.9	24
	<7	9
TLC	4000-11000	96
	>11000	4
CD4 count	<200	64
	200-350	20
	350-500	12
	>500	4

Amongst patients with HIV, staphylococcal skin infections were the most common skin lesions observed in 34% patients. Other cutaneous manifestations observed in decreasing frequency were oral candidiasis (17%), acne vulgaris (10%) and herpetic lesions in 9% patients. However, manifestations associated with histoplasmosis, Human papilloma virus, lichen simplex, molluscum, hidradenitis, pediculosos, psoriasis and scabies were also observed in 1% patients each. (Figure 1)

Table 2 - Association between CD4 count and cutaneous manifestations

Skin lesions		Cd4 count			
		<200	200-350	350-500	>500
Staphylococcus	Total	25 (73.5)	5 (14.7)	3 (8.8)	1 (2.9)
	Folliculitis	10 (83.3)	1 (8.3)	1 (8.3)	0 (0)
	Carbuncle	3 (42.9)	2 (28.6)	1 (14.3)	1 (14.3)
	Abscess	3 (60)	1 (20)	1 (20)	0 (0)
	Impetigo	4 (100)	0 (0)	0 (0)	0 (0)
	Cellulitis	3 (75)	1 (25)	0 (0)	0 (0)
	Furuncle	2 (3.1)	0 (0)	0 (0)	0 (0)

Oral candidiasis	10 (58.8)	3 (17.6)	3 (17.6)		1 (5.9)
Acne vulgaris		8 (80)	1 (10)		0 (0)
Herpes Zoster Virus		7 (77.8)	1 (11.1)		0 (0)
Onychomycosis		2 (50)	1 (25)		1 (25)
Teniacorporis		2 (50)	1 (25)		0 (0)
Herpes Simplex Virus		1 (33.3)	1 (33.3)	0 (0)	1 (33.3)
Xerosis		2 (66.7)	1 (33.3)	0 (0)	0 (0)
Seborrheic Dermatitis		1 (50)	1 (50)	0 (0)	0 (0)
Teniapedis		1 (50)	1 (50)	0 (0)	0 (0)
Condyloma		1 (50)	1 (50)	0 (0)	0 (0)
Generalized Hyperpigmentation		1 (50)	1 (50)	0 (0)	0 (0)
Histoplasmosis	0 (0)		1 (100)	0 (0)	0 (0)
Human Papilloma Virus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Lichen simplex	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Molluscum	0 (0)		1 (100)	0 (0)	0 (0)
Hidradenitis Suppurativa	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)
Pediculosis	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)
Psoriasis	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Scabies	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)
χ ²		63.5			
P value		0.753			

Staphylococcal infections were the most common cutaneous manifestations observed in present study. Overall, it was observed that all the patients with cutaneous manifestations had low CD4 cell count. However, no statistically significant association between CD4 count and cutaneous manifestations could be documented in present study (p>0.05). (Table 2)

DISCUSSIONS

Cutaneous disorders are one of the most common manifestations amongst patients with HIV and approximately 90% of people infected with HIV may suffer from cutaneous disease during their illness.^[6] These manifestations are associated with immune status of an individual, majority being manifested in later stages of HIV.^[13,14,15] In present study, mean age of patients was 43.9±10.2 years and maximum belonged to 41 to 50 years. Similarly, Shehu et al^[16] and Devarpanah et al^[17] documented mean age of patients as 43.08 ± 11.8 years and 40.87 ± 8.04 years.

The prevalence of HIV have been estimated to be slightly higher among males as compared to females.^[2] However, in present study, slight female preponderance was documented. Similarly, slight female preponderance was also observed in a study by Raju et al in which 60% patients were females and 40 males.^[18]

HIV is a progressive disease. As the disease advance, CD4 tends to be lower and resultant immunodeficiency affects multiple systems. Thus investigations are helpful in identification of opportunistic infections. In present study, mean haemoglobin in patients with HIV was in anaemic range i.e. 9.5±1.5 gm/dl and majority of patients had haemoglobin levels less than 11 gm/dl. Anaemia in patients with HIV could be associated with three mechanisms, i.e. decreased production of RBS, increased destruction and erythropoiesis. However, anaemia is also associated with blood loss due to underlying conditions such as neoplastic disease (e.g., Kaposi sarcoma in the gastrointestinal tract) or gastrointestinal lesions that accompany opportunistic cytomegalovirus infection.^[19] Immunodeficiency as a result of HIV may be associated with reduced WBC counts. However, in present study, TLC were in normal range in majority of patients. Literature suggest that TLC may predict the CD4

count and combination of TLC with heamoglobin may increase its diagnostic accuracy.^[20,21] CD4 counts are an important marker of immune status of an individual. We observed low CD4 counts (<500) in 96% patients with HIV. However, mean CD4 count amongst patients with HIV was 243.2 ± 103.2 cells/mm³. About 64% patients had CD4 counts less than 200 cells/mm³. These findings were supported by findings of Ashwini et al^[22] and Kumari et al^[23], in which majority of patients had CD4 <200. CD4 counts and TLC have been observed to have a significant association in various literature.^[22]

Cutaneous manifestations are observed in more than 90% patients of HIV and they may be the first manifestation among them.^[24] Skin lesions though associated with HIV, but they represent underlying disorder amongst these patients that are more severe and unresponsive to treatment. These manifestations have been attributed to immune deficiency of advanced AIDS.^[24] In present study, staphylococcal skin infections were the most common skin lesions documented in 34% patients. Amongst staphylococcal infections, folliculitis and carbuncle were the most common cutaneous manifestations. Other manifestations observed in small number of patients were histoplasmosis, Human papilloma virus, lichen simplex, molluscum, hidradenitis, pediculosis, psoriasis and scabies. Dunkerley et al concluded that staphylococcus aureus is the most common cutaneous bacterial infection amongst patients with HIV.^[25] It has been documented that about 50% patients with HIV harbours staphylococcus aureus in their nasal mucosa.^[26,27] Various literature suggested varied clinical manifestations. Ashwani et al (2020) documented oral candidiasis followed by herpes zoster and dermatophytoses to be the most common cutaneous manifestations in people with HIV.^[22] However, Kumari et al documented pruritic papular eruption, cutaneous drug reactions, molluscum contagiosum and seborrheic dermatitis in higher proportions in HIV patients.^[23] Raju et al observed mucocutaneous candidiasis (15%) and pyogenic bacterial infections (15%), followed by dermatophytic (11%) and seborrheic dermatitis (10%) to be the most common manifestations in HIV.^[18] The observed difference in cutaneous manifestations between present study and reference study could be due to difference in geographical area and difference in stage of HIV at the time of presentation.

The cutaneous manifestations in patients with HIV have been significantly associated with CD4 count. As the CD4 count level decrease, levels of immunodeficiency increases leading to opportunistic infections and thus cutaneous manifestations.^[24] In present study, >95% patients had CD4 counts less than 500 cells/cu.mm and overall, patients with cutaneous manifestations presented in our study had low CD4 cell count but the observed association of low CD4 count could not be documented ($p > 0.05$). This could be due to inclusion of 100% cases with cutaneous manifestations in our study. Ashwini et al documented higher occurrence of mucocutaneous manifestations in patients with lower CD4 count.^[22] Shehu et al also documented significantly higher occurrence of dermatological pathologies with increase in stage of the disease.^[18] Devarpanah et al, however, observed no statistically significant association between CD4 cell count and infectious or noninfectious dermatologic manifestations ($P = 0.274$).^[17]

The present study had with certain limitations. The study included all the patients with cutaneous manifestations. However, inclusion of patients of HIV with no cutaneous manifestations and association of CD4 counts with presence or absence of cutaneous manifestations could have yielded better results.

CONCLUSION

Cutaneous manifestations are more prevalent in patients with lower CD4 counts and can also be observed with normal CD4

count levels amongst patients with HIV. Most common cutaneous manifestations were staphylococcal skin infections. Occurrence of cutaneous manifestations was higher in patients with lower CD4 count but the observed difference was not statistically significant.

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