

Skin Manifestation among HIV Patients and Its Correlation with CD4 Count and WHO Clinical Staging in Jimma University Specialized Hospital, Southwest Ethiopia

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Abstract

Background: More than 90% of human immunodeficiency virus (HIV+) infected patients develop skin lesions at some time throughout the course of the disease. Several skin diseases have proved to be sensitive and useful indicators of progression of HIV+ infection. Although these conditions may be seen in general healthy population, their occurrence in patients with acquired immunodeficiency syndrome is often atypical, more severe and explosive.

Objective: The aim of the study was to assess the magnitude and prevalence of skin manifestation among HIV patients in JUSH ART Clinic.

Methods: A retrospective study was conducted among HIV patients in JUSH ART Clinic using a structured data collection format and the data was collected from patient's record (card) and was analyzed by using SPSS version 20. The result was presented using numbers, ratios and tables.

Results: Of 268 HIV/AIDS, patients who have follow-up in Jimma University Specialized Hospital (JUSH) Antiretroviral therapy (ART) clinic 137 (51.1%) were having skin manifestations. The commonest type of skin lesion identified was Herpes Zoster, 74 (54%). This study showed that HIV positive (HIV+) patients with advanced stages of skin disorders had relatively lower CD4+ cell counts. Skin manifestation was significantly associated with WHO clinical stage with $P=0.019$ and CD4+ cell count with a P -value 0.0001.

Conclusion: Skin diseases are highly prevalent among HIV- Positive patients and the frequency and number of these manifestations are well correlated to the patient's immune status and World Health Organization (WHO) staging. Therefore, examination of skin disorders, as early diagnosis and management of skin problems will improve the quality of life in HIV positive patients.

Keywords: Skin manifestation; CD4 count; WHO staging; JUSH

Background

Dermatologic problems occur in >90% of patients with Human Immunodeficiency Virus (HIV) infection. Several skin diseases have proved to be sensitive and useful indicators of progression of HIV infection. Although these conditions may be seen in general healthy population, their occurrence in patients with acquired immunodeficiency syndrome is often atypical, more severe, explosive, extensive or resistant to therapy. Cutaneous manifestations of HIV disease can be seen throughout the course of HIV infection. Among the more common nonneoplastic problems are seborrheic dermatitis, folliculitis and opportunistic infections [1].

Problems with the skin are among the main reasons for seeking care, accounting for up to 24% of primary care visits, and are one of the most common causes of morbidity [2]. Transmissible processes, including infections and infestations, make up the majority of skin disease in many Sub-Saharan African countries accounting for 85% of skin disease in Tanzania, 78% in Malawi, 71.5% in Ethiopia and 40.1% in Uganda [3]. However, primary care providers may have difficulty diagnosing and treating other important skin diseases which often need referrals to specialized dermatology centers [4].

Patient infected with HIV are significantly more likely to develop any of 17 of 20 most common infectious or inflammatory skin conditions. HIV infected patients may experience a variety of dermatologic manifestation. Many of these are readily treatable. HIV infected persons have higher than normal frequency of cutaneous and systemic reactions to a variety of medications [5].

The magnitude and the prevalence of the problem are helpful in early detection and management of the problem. HIV infection predisposes patients to a variety of opportunistic infection as well as reactivation of latent infections. Especially those who have progressed to the acquired immunodeficiency syndrome (AIDS). Skin Disorder and mucosa are among the most common and earliest clinical manifestation of HIV infection [6].

The study done on the socio-demographic distribution of HIV/AIDS and skin disease in southwest Ethiopia showed that the majority of the patients were from rural area (65.69%) and belonged to a low socioeconomic and educational status. Approximately 30.65% of the patients were housewives, 23.35% drivers, and 16.78% laborers. Most common HIV+ related dermatological manifestations were seborrheic dermatitis (74.16%), xerosis (52.5%), generalized skin

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hyperpigmentation 56 (46.67%), onychomycosis 53 (44.16%), pruritic papular eruption 27 (22.5%), oral candidiasis 21 (17.5%), photo dermatitis 21 (17.5%) and scabies 4 (3.33%) [7].

A prospective observational study of 2-year duration carried out in the Department of Pathology of a tertiary referral center [8]. A total of 110 known HIV positive patients of all ages with symptomatic skin lesions attending skin and venereal disease outpatient department and Anti-Retroviral Therapy Clinic at this center were included in the study. Out of total 110 known HIV infected patients, 74 were males and 36 were female patients. Maximum numbers of cases were seen between 31 and 40 years of age group. Average age in the study was 34 years. CD4+ cell count was correlated in 70 cases. Out of 70 HIV+ patients, 42 (59%) patients had CD4+ cell count <200 cell/mm³. 10 (15%) patients showed CD4+ cell counts between 200 and 350 cell/mm³, 11 patients had CD4+ cell count counts from 350 to 500 cell/mm³ and 7 (10%) patients had CD4+ cell count >500 cell/mm³ [9].

The smallest percentage of African HIV positive patients reported else were as developing herpes Zoster is 7% (Namibia Hospital, Kampala, Uganda) and the largest is 23%. But the larger the number of patients in the series, the closer the percentage approximates to 15% [10].

In Ethiopia from study done showed that from a total of 8,622 HIV/AIDS positive cases, 172 (2%) had skin rashes, 1293 (15%) had recurrent herpes Zoster, 1466 (17%) had generalized pruritic dermatitis, 1724 (20%) had oropharyngeal candidiasis, 86 (1%) had chronic herpes simplex and 34 (0.4%) had Kaposi's sarcoma [11].

Methods

Study design and setting

This was a retrospective cross sectional study using data available as employed from March 20, to April 27, 2016 in Jimma University Specialized Hospital. The hospital (JUSH) is located in Jimma City, 357 km away from Addis Ababa to southwest Ethiopia. The hospital is a referral centre for the Southwestern part of Ethiopia. Currently it became the only teaching and referral hospital in the southwestern part of the country. It provides services for approximately 9000 inpatient and 80000 outpatient attendances a year coming to hospital from the catchment population of about 15,000 million people.

Study sample

The study sample included all 220 medical records of patients who visit JUSH ART Clinic for the first time after diagnosis during the study period and those have full information were included. However, incomplete records were excluded.

Study variables

The outcome variables for this study were Skin manifestation, WHO Clinical Staging, type of skin lesion were extracted as variable from the record. The predictor variables like demographic variables were extracted from records.

Data processing, analysis, interpretation and presentation

Te data were entered in double EpiData software, checked for missing values and outliers and analyzed using SPSS version 20. Descriptive statistics were used to describe the study population in relation to relevant variables. To identify association of skin manifestation with CD4+ cell count and WHO staging the negative binomial regression model was used to control the effect of confounders. Test was two-sided and P<0.05 was considered statistically significant.

Results

Socio-demographic characteristics

The study involved 268 HIV+ patients who were having follow-up to JUSH ART Clinic. From the study population 163 (60.8%) were female and 105 (39.2%) were males. Most of the patients 149 (55.6%) were within the age group of 15-30 years while 3 (1.1%) were in the age group of >50 years. One hundred and forty three (53.4%) were from rural area (Table 1).

From the study population 137 (51.1%) of them were having skin manifestations. 84 (31.3%) were female and 53 (19.8%) were males. Most of the patients 67 (25%) were in the age group 15-30 years and 60 (22.4%) were in the age group of 31-50 years.

Out of 268 HIV+ patients who were on ART, 137 (51.1%) had skin manifestations. Among them 74 (54%) were having Herpes Zoster followed by oral candidiasis 31 (22.6%), while 6 (4.4%) were having Moluscum Contagiosum and only 1 (0.7%) patient has other (minor mucocutaneous skin lesion).

Appropriate diagnosis and management of drug hypersensitivity reactions are essential, especially in patients with very low CD4+ T-cell count and multiple opportunistic infections. In our study 3 (2.2%) the HIV+ patient had showed hypersensitivity reaction. The female to male ratio regarding hypersensitivity reactions was 2:1 (Table 2).

Regarding the CD+ cell counts, most of HIV+ patients 55 (40.1%) had CD4+ cell counts <200 cell/mm³ and 54 (39.4%) had CD4+ cell count 200-350 cell/mm³. Skin manifestation is significantly associated with CD4+ cell count P=0.0001.

From the study population 137 (51.1%) of them were having skin manifestations. Approximately 61 (44.5%) were found in the WHO stage III, 55 (40.1%) in the WHO stage II and 20 (14.6%) found in stage

Characteristics		No	%
Sex	M	105	39.2
	F	163	60.8
	Total	268	100.0
Age	<15	8	3
	15-30	149	55.6
	31-50	108	40.8
	>50	3	1.1
	Total	268	100.0
Residence	Urban	125	46.6
	Rural	143	53.4
	Total	268	100.0
Marital Status	Single	45	16.8
	Married	130	48.5
	Divorced	71	26.5
	Widowed	22	8.2
	Total	268	100.0
Occupation	Student	18	6.7
	Driver	7	2.6
	Government Employee	138	51.5
	Bed ridden	27	10.1
	House Wife	58	21.6
	Other	20	7.5
	Total	268	100.0

Table 1: Socio demographic distribution of HIV/AIDS patients in JUSH ART Clinic, southwest Ethiopia, Oromia region from January 1, 2015–December 31, 2015.

Type of skin lesion	Sex				Total	
	M		F		Number	Percent (%)
	Number	Percent (%)	Number	Percent (%)		
Herpes Zoster	30	21.9	44	32.1	74	54
Oral candidiasis	12	8.8	19	13.9	31	22.6
Moluscum Contangiosum	2	1.5	4	2.9	6	4.4
Orolabial herpes	1	0.7	5	3.6	6	4.4
Genital herpes	2	1.5	2	1.5	4	2.9
Seborrhoeic dermatitis	2	1.5	2	1.5	4	2.9
Drug reaction	1	0.7	2	1.5	3	2.2
Pruritic papular eruptions	1	0.7	2	1.5	3	2.2
Kaposi Sarcoma	0		1	0.7	1	0.7
Chancroid	0		1	0.7	1	0.7
Norwegian scabies	1	0.7	0		1	0.7
Oral hairy leukoplakia	1	0.7	0		1	0.7
Psoriasis	0		1	0.7	1	0.7
Folliculitis	0		0		0	
Atopic dermatitis	0		0		0	
Condyloma acuminatum	0		0		0	
Others	0		1	0.7	1	0.7
Total	53	38.7	84	61.3	137	100

Table 2: Distribution of skin lesions in HIV/AIDS patients by Sex in JUSH ART Clinic, Southwest Ethiopia, Oromia region from January 1, 2015–December 31, 2015.

Type of skin lesion	WHO Clinical Staging					
	I	II	III	IV	Frequency	Percent
Herpes zoster	0	44	26	4	74	54
Orolabial herpes	0	1	5	0	6	4.4
Condyloma acuminatum	0	0	0	0	0	0
PPE	0	1	2	0	3	2.2
MoluscumContangiosum	0	3	2	1	6	4.4
Kaposi Sarcoma	0	0	0	1	1	0.7
Chancroid	0	1	0	0	1	0.7
LGV	0	0	0	0	0	0
Genital herpes	0	1	2	1	4	2.9
Oral candidiasis	0	0	19	12	31	22.6
Genital candidiasis	0	0	0	0	0	0
Oral hairy leukoplakia	0	0	0	1	1	0.7
psoriasis	0	0	1	0	1	0.7
folliculitis	0	0	0	0	0	
Norwegian scabies	0	0	1	0	1	0.7
Seboricdermatitis	0	2	2	0	4	2.9
Atopic dermatitis	0	0	0	0	0	0
Drug reaction	1	1	1	0	3	2.2
Others	0	1	0	0	1	0.7
Total	1	55	61	20	137	100.0

$\chi^2=77.192$; DF=3; P=0.000

Table 3: Skin lesion occurring in each WHO clinical stage in JUSH ART Clinic Southwest Ethiopia, Oromia region from January 1, 2015–December 31, 2015.

IV, skin manifestation was significantly associated with WHO clinical staging of HIV/AIDS P=0.0198 [12] (Table 3).

Discussion

Most studies done on the prevalence of skin manifestation among HIV/AIDS patients are population based; those conducted using a hospitalized population are scarce, which limit comparison of the study.

In this study, among HIV/AIDS patients who were already antiretroviral therapy and the data retrieved from January to December showed that the overall prevalence of skin manifestation was 137

(51.1%). The result is comparable with study done in Ethiopia in the sero-epidemiological survey that was 55.4%. However, the study conducted in India on HIV+ patients, skin manifestation was 110 (87.6%) which is significantly higher [13].

This variation in the prevalence of skin manifestation in this study and the above study could be due to the variation in the geographic location, socioeconomic status and method of determination of the sample size. The alternative explanation for this variation could be this study is done among patients who have follow-up.

The prevalence of the problem in HIV/AIDS positive patients is likely to be a combined result of the presence of other opportunistic infection which further cause decreases the immunity.

In this study, the most common type of skin lesion is Herpes Zoster 74 (54.0%). This value is higher than the study done in Ethiopia from January 1986 to October 1993, which were Herpes Zoster skin lesion (17%) in Ethiopia and (23%) in Uganda. This higher value could be because most of the patients have low CD4+ cell count, which is significantly associated with skin manifestation.

In study done by Kumarasamy et al. [14] of 110 HIV infected patients, CD4 correlation was done in 70 patients. Maximum patients, i.e., 42 (59%) had CD4 count below 200, followed by 21 (31%) patients with CD4 counts between 200 and 500, whereas 7 (10%) had CD4 counts above 500. This value is higher than the above study.

Among those patients with skin manifestation 55 (40.1%) of them were having CD4+ cell count <200 cell/mm³ and 54 (39.4%) of HIV+ patients were having CD4+ cell counts between 200 cell/mm³ to 350 cell/mm³. Only 5 (3.6%) patients had CD4+ cell count >500 cell/mm³ and had skin lesion. Skin manifestation is significantly associated with CD4+ cell count in this study (P=0.0001).

In general, in the study the overall prevalence of skin manifestation was high. The most common type of skin lesion was Herpes Zoster. Skin manifestation is associated with CD4+ cell counts and with WHO stage of HIV/AIDS positive patients. Health professionals should give attention on the early detection of skin manifestations among HIV/AIDS positive patients to prevent severity and its complication.

Clinicians should be aware of the different half-life of each drug when decided to stop the drug reaction. Knowledge of the metabolism, recognition of the risk factors and the ability to suggest the probability of particular drug as causative are also important points.

Declarations

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Availability of data and materials

Upon request, we can offer on-site access to external researchers to the data analyzed at the SPSS, Jimma University, Ethiopia.

Authors' contributions

The authors' responsibilities were as follows: MA formulated the study hypothesis together with AT, MA and AT performed the statistical analyses and contributed to the first and final draft of the manuscript. MA and AT contributed to the interpretation of the study results and to the first and final draft of the manuscript.

Ethics approval and consent to participate

The study was ethically approved by the College of Health, Jimma University Ethical Review Board.

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References

1. Dennis L, Kasper Z, Braunwald S, Danalog J, Harrison L (2013) *Principle of internal medicine*, 18th edition, pp: 33-37.

2. Baldrige JR, Thomashow MF, Hinrichs DJ (1988) Induction of immunity with avirulent *Listeria monocytogenes* 19113 depends on bacterial replication. *Infect Immun* 56: 2109-2113.
3. Nnoruka EN (2005) Skin diseases in south-east Nigeria: A current perspective. *Int J Dermatol* 44: 29-33.
4. Gibbs S (1996) Skin disease and socioeconomic conditions in rural Africa: Tanzania. *Int J Dermatol* 35: 633-639.
5. Kristensen JK (1991) Scabies and Pyoderma in Lilongwe, Malawi: Prevalence and seasonal fluctuation. *Int J Dermatol* 30: 699-702.
6. Wiwanitkit V (2004) Prevalence of dermatological disorders in Thai HIV-infected patients correlated with different CD4 lymphocyte count statuses: A note on 120 cases. *Int J Dermatol* 43: 265-268.
7. Kumarasamy N, Solomon S, Madhivanan P, Ravikumar B, Thyagarajan SP, et al. (2000) Dermatologic manifestations among human immunodeficiency virus patients in south India. *Int J Dermatol* 39: 192-195.
8. Coopman SA, Johnson RA, Platt R, Stern RS (1993) Cutaneous disease and drug reactions in HIV infection. *N Engl J Med* 328: 1670-1674.
9. Smith KJ, Skelton HG, Yeager J, Ledsky R, McCarthy W, et al. (1994) Cutaneous findings in HIV-1-positive patients: A 42 month prospective study. Military Medical Consortium for the Advancement of Retroviral Research (MMCARR). *J Am Acad Dermatol* 31: 746-754.
10. Friedman-Kien AE, Lafleur FL, Gendler E, Hennessey NP, Montagna R, et al. (1986) Herpes zoster: A possible early clinical sign for development of acquired immunodeficiency syndrome in high-risk individuals. *J Am Acad Dermatol* 14: 1023-1028.
11. Nichols L, Balogh K, Silverman M (1989) Bacterial infections in the acquired immune deficiency syndrome. Clinicopathologic correlations in a series of autopsy cases. *Am J ClinPathol* 92: 787-790.
12. Dover JS, Johnson RA (1991) Cutaneous manifestations of human immunodeficiency virus infection. Part II. *Arch Dermatol* 127: 1549-1558.
13. Frommel D, Tekle-Haimanot R, Verdier M, Negesse Y, Bulto T, et al. (1994) HIV infection and leprosy: A four-year survey in Ethiopia. *Lancet* 344: 165-166.
14. Inserra DW, Bickley LK (2010) Crusted scabies in acquired immunodeficiency syndrome. *Int J Dermatol* 77: 287-289.