RESEARCH

CORRELATION OF IMMUNOSUPPRESSION AND MUCOCUTANEOUS MANIFESTATIONS AMONG PATIENTS WITH HIV INFECTION- A HOSPITAL-BASED STUDY FROM EAST INDIA

B Swagat Kumar Subudhi[1], Subodha Kumar Patjoshi[2], Utkal Naik[3], Sibasish Patro[4]

[1]Assistant Professor, Department of Surgery, Saheed Laxman Nayak Medical College & Hospital Koraput Odisha India.
[2]Assistant Professor, Department of Skin & VD, VIMSAR BURLA, India.
[3]Assistant Professor, Department of (O&G), SLNMCH Koraput, India.
[4]Assistant Professor, Department of Skin & VD, SLN Medical College, Koraput, India.

Received : 09/06/2022
Received in revised form : 13/08/2022
Accepted : 21/08/2022

Keywords:
Immunosuppression, Mucocutaneous Manifestations, HIV infection

Corresponding Author:
Dr. Sibasish Patro,
Email. doc6904@gmail.com
ORCID: 0000-0002-5419-3085

DOI: 10.47009/jamp.2022.4.4.7

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2022; 4 (4); 33-36

Abstract

Background: During the course of their illness, more than 90% of human immunodeficiency virus (HIV)-infected patients have at least one mucocutaneous symptom. One of the most important clinical indications for predicting the level of systemic immunosuppression, opportunistic infections, and HIV disease progression is mucocutaneous manifestations. Objectives are to know whether mucocutaneous manifestation can be used as marker of immunosuppression, to correlate mucocutaneous manifestations with immunosuppression in HIV infection. **Materials and Methods:** A total of 150 HIV-seropositive patients of adult age group visiting a tertiary care Medical College and hospital were included in the study. Information on socio-demographic characteristics, CD4 counts, and mucocutaneous manifestations were collected. **Result:** Total of 284 mucocutaneous manifestations among them. The most common disorders were fungal infections (18%), followed by oral lesions (15.5%) and Papilosquamous disorder (14.8%). Out of 284 mucocutaneous manifestations 165 (58.09%) having CD4 count <200 cells/mm^3, 105 (36.97%) having CD4 count in between 200-500 cells/ mm^3 and 14 (7.6%) having CD4 count >500 cells/ mm^3. **Conclusion:** This study revealed the lesser the number for CD4 count more is the dermatological manifestations. So both CD4 count and mucocutaneous manifestations can be used as marker of immunosuppression in HIV/AIDS patients. Mucocutaneous symptoms alone can be employed as marker of immunosuppression in resource-poor settings where CD4 count and other pricey indicators are not accessible.

INTRODUCTION

Human immunodeficiency virus (HIV), which weakens the immune system and affects various tissues and organs, including the skin, is the chronic illness known as acquired immunodeficiency syndrome (AIDS).[1] Mucocutaneous lesions are the most typical symptom, and they can also be sensitive and helpful indications of a patient's immunological health.[1,2,3,4] HIV often first manifests as mucocutaneous sores, allowing for early detection and treatment.[5] Although these lesions can appear in healthy people, they typically appear more severely, atypically, widely, and stubbornly in HIV-infected patients. 3. HIV-positive patients' skin conditions are categorized as main and secondary.[6] Patients with HIV are more likely to develop common cutaneous problems as well as a variety of inflammatory, infectious, and malignant skin conditions. Since serial CD4 counts have a prognostic significance and are used as markers for assessing the progression from HIV infection to AIDS, mucocutaneous lesions in HIV patients have been correlated with CD4 counts in many studies. They serve as diagnostic factors in monitoring the patients' immune status.[3] The early clinical symptoms and signs in HIV-infected patients frequently result from decreased mucocutaneous immunity. It is becoming more and more obvious that cutaneous problems can happen at any stage of HIV infection, not just in patients with terminal immunodeficiency. More than 90% of HIV-positive individuals experience skin or mucous membrane issues at some point throughout their illness, and in many cases, the skin is the first organ to be impacted.[3] In otherwise healthy people, these indications of HIV illness cause physical discomfort and psychological suffering as they worsen and

become more diversified. Opportunistic pathogens can manifest as unusual cutaneous lesions in advanced immunosuppression, which presents difficulties in both diagnosis and therapy. The main objective of this study is to know whether mucocutaneous manifestation can be used as sole marker of immunosuppression and to correlate mucocutaneous manifestations with immunosuppression in HIV infection.

MATERIALS AND METHODS

The study was conducted in the Department of Dermatology and Venereology, Sri Ram Chandra Bhanja Medical College and Hospital, Cuttack. We have included 150 seropositive patients enrolled in the hospital from October 2010 to September 2012. After taking their informed consent complete history of each patient was taken, and findings were recorded. All the enrolled patients underwent a thorough physical examination emphasizing mucocutaneous manifestations. Relevant diagnostic procedures such as scraping and KOH examination for the diagnosis of dermatophytoses and candidiasis, Tzanck smear for the diagnosis of herpes infection, dark field microscopy for the diagnosis of a syphilitic ulcer, and biopsies are performed as needed were carried out. The proforma that is attached to this document includes a complete record along with the baseline CD4 count and CD4 count that was performed before the occurrence of particular dermatological symptoms. both the diagnosis and the therapy. The data were analyzed using multinomial logistic regression analysis (SPSS Version 11.0). The prevalence rate of mucocutaneous manifestations was estimated. The statistical significance was evaluated using the Chi-square test with a significance level of 95%.

RESULTS

A total of 150 HIV seropositive patients were found to have mucocutaneous manifestations of the disease. Out of 150 patients, 96 patients (64%) were male. There were a total of 284 mucocutaneous manifestations with an average of 1.9 conditions per patient. [Table 1] shows the sociodemographic characteristics of study participants.

The frequencies of different mucocutaneous manifestations are presented in [Table 2]. The most common disorders were fungal infections (18%), followed by oral lesions (15.5%) and Papilosquamous disorder (14.8%). In 35 (68.7%) patients with a fungal infection, the CD4 count is less than 200 cells/mm3. Among patients having a bacterial infection, 19 (64%) are with CD4 count <200 cells/mm3 and with Papilosquamous disorder, 14 patients (33.3%).

Out of 284 mucocutaneous manifestations 165 (58.09%) having CD4 count <200 cells/mm^3, 105 (36.97%) having CD4 count in between 200-500 cells/ mm^3 and 14 (7.6%) having CD4 count >500 cells/ mm^3 [Figure 1].

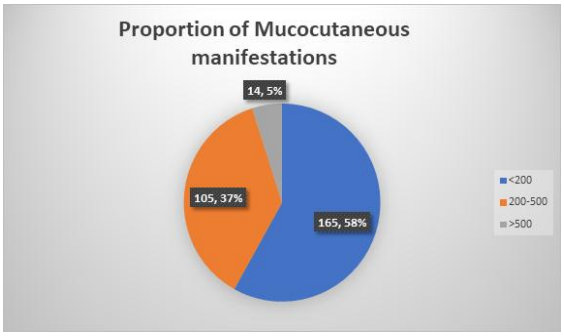

Figure 1: Proportion of Mucocutaneous manifestations

Table 1: Sociodemographic characteristics

		Male	Female	Total N (%)
Age Group	0-15	3	5	8 (5.3)
	16-30	12	28	40 (26.7)
	31-45	68	17	85 (56.7)
	>45	13	4	17 (11.3)
Occupation	Unskilled labourer	47	16	63 (42)
	Skilled labourer	35	2	37 (24.7)
	Housewives	0	24	24 (16)
	Businessman	9	3	12 (8)
	Unemployed	2	5	7 (4.7)
	Not applicable	3	4	7(4.7)
Marital Status	Unmarried	17	6	23 (15.3)
	Married	70	29	99 (66)
	Widowed	4	12	16 (10.7)
	Divorced	2	2	4 (2.7)
	Not applicable	3	5	8 (5.3)

Table 2: Mucocutaneous manifestations in HIV-infected patients and their relationship with CD4 lymphocyte counts.

Cutaneous Manifestation	CD4 Count (N)			N (%)
	<200	200-500	>500	
Bacterial infections	19	11	0	30 (10.6)
Fungal infections	35	12	4	51 (18.0)
Viral infections	11	11	1	23 (8.1)
Parasitic infestations	12	5	2	19 (6.7)
Pruritic Papular eruptions	20	12	1	33 (11.6)

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Papulosquamous disorder	14	24	4	42 (14.8)
Oral lesions	31	11	2	44 (15.5)
Drug reactions	9	7	1	17 (6.0)
Hair changes	7	5	0	12 (4.2)
Nail changes	21	14	1	36 (12.7)

Table 3: Major Mucocutaneous Disorders

Major mucocutaneous disorders		**Mean CD4 ± Standard deviatation (SD)**
1	Dermatophytoses	161.36± 133.71
2	Oral Candidiasis	178.62± 161.11
3	Folliculitis	204.47± 137.45
4	Herpes Zoster	168.33± 179.74
5	Herpes Genitalis	234.42± 219.16
6	Herpes Labialis	268.8± 201.13
7	Molluscum Contagiosum	217.66± 127.64
8	Scabies	197.94± 178.68
9	Pruritic Papular Eruption	158.45±157
10	Seborrheic Dermatitis	381.26±174.88
11	Xerosis	196.9± 194.54
12	Maculopapular drug reaction	154.41± 133.33
13	Stevens Johnson syndrome	201± 193.74
14	Erythema multiforme	226.5± 159.9

DISCUSSION

Being that the skin is the organ most commonly affected in those with HIV infection, the cutaneous manifestations of the human immunodeficiency virus (HIV) infection have been a challenge that has required intense investigation. HIV-induced infectious and non-infectious skin conditions may not only be a sign of HIV infection but also of the severity of the disease and amount of immunosuppression. In developing nations where the most common evaluation of immunity with CD4 count cannot be done due to financial constraints, it is crucial.[7]

Because of the itinerant nature of their jobs and the underreporting of females, the high prevalence of males (64%) can be attributed to these issues. According to a research by Bravo et al. (2006), 51% of patients in the age group 30-39 years 8 were impacted, and the next most common age group to be affected was 31-45 years (56.6%), followed by 15-30 years (26.6%). This appears to be connected to risky sexual behavior among people in this age group.

The majority of the patients (42%) were unskilled workers earning largely daily wages, and the next-highest group (24.6%) were skilled workers. Due to the hospital's free services, more people from middle-class and lower socioeconomic backgrounds visit the facility. The majority of female patients (24) were stay-at-home mothers. This highlights the primary source of infection for females, which is heterosexual interaction with their husband.[8]

Folliculitis was most common manifestation (6.6%) of total dermatological manifestations comparable to the study by Srikant KP et al (2010) having 8% folliculitis lesions.[9] The mean CD4 count for bacterial infection is 220.2 mm^3 consistent with the study of Jing et al. (1999) (245.33 mm^3).[10]

The majority (68%) had CD4 count <200 mm^3. The mean CD4 count for Oropharyngeal candidiasis is 178.62 mm^3, comparable to a study by Srikant KP et al. 2010 shows a mean CD4 count 150.8 mm^3.[9] Many studies Shobhana A et al. (2004), X-Huang et al. (2011), Sud N et al. (2009) and Attili VSS et al (2008) reported oral candidiasis as most common mucocutaneous manifestations among their patients.[11,12,13,14] The mean CD4 count for fungal infections was 187.71 mm^3 and was comparable with the study by Kumarswamy et al. (2000) (178 mm^3).[15]

The mean CD4 count of herpes genitalis 232.42 mm^3 comparable to study reported by Shobhana et al (2004) (187 mm^3) and Srikant KP et al (2010) (211.5 mm^3).[9,11] Scabies found in 17 patients (5.9%) of total Parasitic Infestations, consistent with the study of Attili et al. 2008 (5.4%) . The mean CD4 count is 197.94 mm^3 lower than the Attili vss et al (2008) study with 290.8 mm^3.[12] Incidence of scabies varies from 3-6% in the study of Nnoruka et al. (2007), Goh et al. (2007), Smith KJ et al. (1996).[16,17,18] Xerosis among papulosquamous disorders was observed in 7.04% of cases in the study, comparable to the study by Srikant KP et al (2010), which showed 10%.[9]

Adverse drug reactions are seen in 5.9% of total mucocutaneous manifestations, less than 13.6% and 12%, as reported by Attili et al. (2008) and Srikant KP et al. (2010), respectively.[9,12] Among these, 4% had a reaction with one of the antiretroviral drugs (most common with Nevirapine followed by Efavirenz), and the rest had a reaction with non-ART drugs (Cotrimoxazole, Antitubercular therapy and Nonsteroidal antiinflammatory drugs).

Chronic HIV-I infection, recurring secondary infection, nutritional deficiency, and exposure to numerous medicines have all been linked to chronic widespread hair loss in HIV-infected people.[18]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

There was not a single instance of oral hairy leukoplakia (OHL), which is brought on by the Epstein-Barr virus, in the current investigation. OHL cases were more prevalent in studies from the west than in Indian studies, which rarely documented such cases. The prevalence of homosexuality may be the cause of many cases in the west. Significantly, OHL is linked to late-stage HIV infection in people with a CD4 count under 200 mm^3.
females can become infected through heterosexual interaction with their spouse, which is one way and source of infection.

CONCLUSION

Summarizing all above findings, we found that 53 patients with 165 dermatological manifestations have CD4 count below 200 mm3 ,85 patients with 105 dermatological manifestations with CD4 count between 200-500 mm3 and 12 patients with 14 dermatological manifestations were having CD4 count more than 500 mm3. This shows less the CD4 count more will be the dermatological manifestations. So both CD4 count and mucocutaneous manifestations can be used as marker of immunosuppression in HIV/AIDS patients. Resource-poor countries where CD4 count and other expensive markers are not affordable mucocutaneous manifestations alone can be used as marker of immunosuppression.

REFERENCES

1. Nnoruka EN, Chukwuka JC, Anisuiba B. Correlation of mucocutaneous manifestations of HIV/AIDS infection with CD4 counts and disease progression. Int J Dermatol. 2007;46 Suppl 2:14-8. doi: 10.1111/j.1365-4632.2007.03349.x.
2. Lahoti S, Rao K, Umadevi HS, Mishra L. Correlation of mucocutaneous manifestations of HIV-infected patients in an ART center with CD4 counts. Indian J Dent Res. 2017;28(5):549-554. doi: 10.4103/ijdr.IJDR_352_16.
3. Chawhan SM, Bhat DM, Solanke SM. Dermatological manifestations in human immunodeficiency virus infected patients: Morphological spectrum with CD4 correlation. Indian J Sex Transm Dis AIDS. 2013;34(2):89-94. doi: 10.4103/0253-7184.120538.
4. Khambaty MM, Hsu SS. Dermatology of the patient with HIV. Emerg Med Clin North Am. 2010;28(2):355–68.
5. Oninla OA. Mucocutaneous Manifestations of HIV and the Correlation with WHO Clinical Staging in a Tertiary Hospital in Nigeria. AIDS Res Treat. 2014;2014:360970. doi: 10.1155/2014/360970.
6. Cedeno-Laurent F, Gómez-Flores M, Mendez N, Ancer-Rodríguez J, Bryant JL, Gaspari AA, et al. New insights into HIV-1-primary skin disorders. J Int AIDS Soc. 2011;14(1):5.
7. Mirnezami M, Zarinfar N, Sofian M, Botlani Yadegar B, Rahimi H. Mucocutaneous Manifestations in HIV-Infected Patients and Their Relationship to CD4 Lymphocyte Counts. Scientifica. 2020;2020:7503756.
8. Bravo IM, Correnti M, Escalona L, Perrone M, Brito A, Tovar V, et al. Prevalence of oral lesions in HIV patients related to CD4 cell count and viral load in a Venezuelan population. Med Oral Patol Oral Cirugia Bucal. 2006;11(1):E33-39.
9. Srikanth KP, Vijaykumar S, Aparna. A hospital based cross sectional study of mucocutaneous manifestations in HIV infected. Int J CRIMPH. 2010;2:50–78.
10. Jing W, Ismail R. Mucocutaneous manifestations of HIV infection: a retrospective analysis of 145 cases in a Chinese population in Malaysia. Int J Dermatol. 1999;38:457–63.
11. Shobhana A, Guha SK, Neogi DK. Mucocutaneous manifestations of HIV infection. Indian J Dermatol Venereol Leprol. 2004;70:82–6.
12. Attili VSS, Singh VP, Shyam Sundar A. Relationship between skin disease and CD4 cells counts in a hospital based cohort of HIV-infected Adults in North India. JIACM. 2008;9(1):20–5.
13. Sud N, Shanker V, Sharma A. Mucocutaneous manifestations in 150 HIV infected indian patients and their relationship with CD4 lymphocyte count. Int J STD AIDS. 2009;20:771–4.
14. Hung CC, Chen MY, Hsieh SM. Discontinuation of secondary prophylaxis for Penicillinosis marneffei in AIDS patients responding to highly active antiretroviral therapy. AIDS. 2002;16(4):672–3.
15. Kumarasamy N, Solomon S, Madhivanan P, Ravikumar B, Thyagarajan SP, Yesudian P. Dermatologic manifestations among human immunodeficiency virus patients in South India. Int J Dermatol. 2000;39:192–5.
16. Nnoruka EN, Ezeoke AC. Evaluation of syphilis in patients with HIV infection in Nigeria. Trop Med Int Health. 2005;10(1):58–64.
17. Goh BK, W CRK, Sen P. Spectrum of skin disorders in human immunodeficiency virus infected patients in Singapore and the relationship to CD4 lymphocyte counts. Int J Dermatol. 2007;46:695–9.
18. Smith KJ, Skelton HG, Vogel P. Exaggerated insect bite reactions in patients positive for HIV. J Am Acad Dermatol. 1993;29:269–72.

ISSN (O): 2687-5365; ISSN (P): 2753-6556