

Study of Skin, Hair and Nail Changes among HIV Patients and Their Correlation with CD4 Count.

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ABSTRACT

Background: Skin is the most commonly affected organ (90%) in patients with HIV/AIDS. The prevalence of cutaneous involvement approaches 100% and has been recognized as important initial clues to the diagnosis of HIV infection, the possible existence of an associated systemic disease and also in some cases the stage of involvement. The aim of this study is to know the prevalence of manifestations of skin, hair and nail among HIV patients and its correlation with CD4 count. **Methods:** A total of 100 HIV seropositive patients were selected to do this study. Patients presenting with changes in skin, hair and nails were analyzed among selected population. CD4 counts of all patients were also assessed. All the results were analyzed and tabulated. **Results:** Among noninfectious dermatoses, seborrheic dermatitis (10%) was predominantly observed in 10 patients followed by generalised xerosis (5%), ichthyosis (3%), psoriasis (1%). Among dermatoses, most commonly Pruritic papular dermatoses were observed about 12%, followed by eosinophilic folliculitis (3%), papular urticaria(1%). Many of the changes of skin, hair, nail and also oral manifestations were presented among HIV patients with CD4 count <200 cells/mm³. **Conclusion:** Frequency of varied manifestations increased with the fall of CD4 count. Correlating 'CD4 counts' to 'skin lesions' could serve as a guide to start and monitor antiretroviral therapy and to find the prognosis of the diseases.

Keywords: CD4 count, Human Immunodeficiency Virus, Skin Changes.

INTRODUCTION

The HIV (Human Immunodeficiency Virus) pandemic has wreaked enormous financial, political, and health-related havoc.^[1] The virus affects the immunocompetent cells including CD4 T cells and macrophages. It creates variable patterns of disease in individuals and is characterized by immune dysfunction affecting many systems of the body. HIV is not eliminated after primary infection. Persistent virus replication occurs in lymphoid organs throughout the course of HIV infection.^[2]

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Skin is the most commonly affected organ (90%) in patients with HIV/AIDS. The prevalence of cutaneous involvement approaches 100% and has been recognized as important initial clues to the diagnosis of HIV infection, the possible existence of an associated systemic disease and also in some cases the stage of involvement.^[3,4]

Not only skin, even hair and nails will get affected among HIV infections. Hair changes such as patchy

or generalized alopecia,^[5] hypertrichosis of eyelashes, eyelash trichomegaly etc and Nail changes such as clubbing,^[6] blue nails, onychomycosis, melanonychia, periungual erythema etc were noted in HIV patients.

Drug reactions are frequent in HIV-positive individuals, and this is augmented by the polypharmacy advocated for the host of varied clinical association. All though any drugs may cause adverse drug reactions, most common are sulfonamides, amoxycillin clavulonate, antituberculous therapy and anti- retroviral drugs.

The aim of this study is to know the prevalence of manifestations of skin, hair and nail among HIV patients and its correlation with CD4 count.

MATERIALS AND METHODS

A Prospective study was done among HIV seropositive patients attending ART center at Government Medical College, Ananthapur from August 2013 to July 2014. Informed consent has taken from the patients before doing this study. Ethical committee approval has taken.

A total of 100 HIV seropositive patients were selected to do this study.

All the patients were underwent pretest counseling, before blood samples collection. Blood samples were tested for anti-HIV antibodies using one confirmatory and two screening tests according to NACO guidelines. Tests for HIV detection done were COOMB method, TRIDOT methods, TRILINE method. Patient blood samples were also tested for CD4 count using BD autoanalyzer which follows flowcytometry principle. Patients presenting with changes in skin, hair and nails were analyzed among selected population. CD4 counts of all patients were also assessed. All the results were analyzed and tabulated.

RESULTS

Among 100 HIV seropositive patients studied, 63 were males and 37 were female, age ranging between 4 to 65 years. Majority of the patients were in the age group of 31-40 years (47%) with the mean being 35.1 years, followed by 21-30 years (24%), 41-50 years (15%), 1-10 years (7%), >50 years (5%) and 11-20 years (2%). Among study group, the CD4 count ranged between 16 and 736 cells/ μ l, with a mean of 273.29. Majority of the patients had CD4 count of <200 cells/ μ l, accounting 49%. Among non-infectious dermatoses, seborrhoeic dermatitis was predominantly observed in 10 patients followed by generalised xerosis, ichthyosis, psoriasis [Table 1].

Table 1: Distribution of cases according to types of papulosquamous diseases & CD4 count

Papulosquamous disease/	CD4 count (cells/ μ l)			Total	Percentage
	<200	200-500	>500		
Seborrhoeic dermatitis	7	2	1	10	10%
Xerosis	3	0	2	5	5%
Ichthyosis	0	2	1	3	3%
Psoriasis	0	0	1	1	1%
Total	10	4	5	19	19%

Among dermatoses, most commonly Pruritic papular dermatoses (PPE) were observed about 12%, followed by eosinophilic folliculitis (3%), papular urticaria(1%). Majority of the PPE were on HAART [Table 2].

Table 2: Distribution of cases according to types of dermatoses & CD4 count

Dermatoses	CD4 count (cells/ μ l)			Total	Percentage
	<200	200-500	>500		
Pruritic Papular Dermatoses	8	3	1	12	12
Eosinophilic Folliculitis	2	1	0	3	3
Papular Urticaria	0	1	0	1	1
Total	10	5	1	16	16

Most common Adverse Drug Reaction (ADR) observed was maculopapular rash following the administration of Nevirapine. Fixed Drug Eruption (FDE) was noted in 2 patients and Urticaria in 1 patient. Most common drugs implicated were Nevirapine, NSAID'S and Cotrimoxazole [Table 3].

Table 3: Distribution of cases according to types of ADE & CD4 count

Adverse Drug Reactions	CD4 count (cells/ μ l)			Total	Percentage
	<200	200-500	>500		
Maculo papular rash	2	2	0	4	4
Fixed Drug Eruption	0	1	1	2	2
Urticaria	0	1	0	1	1
Total	2	4	1	7	7

Hair changes included partial alopecia, spontaneous straightening of hairs, diffuse alopecia. Hair changes were almost equal in patients with CD4 count <200 cells/ μ l and 200-500 cells/ μ l group [Table 4].

Table 4: Distribution of cases according to hair changes & CD4 count

Hair Changes	CD4 count cells/ μ l			Total	Percentage
	<200	200-500	>500		
Partial alopecia	3	4	0	7	7
Spontaneous straightening	2	2	0	4	4
Diffuse alopecia	2	0	0	2	2
Total	7	6	0	13	13

Among various Nail changes, bluish discoloration of nails and koilonychia were more commonly noted in this study [Table 5]. No nail changes were observed in patients with CD4 count >500 cells/mm³

Table 5: Distribution of cases according to nail changes & CD4 count

Disorders	CD4 count cells/ μ l			Total	Percentage
	<200	200-500	>500		
Bluish discoloration	8	2	0	10	10
Koilonychia	8	0	0	8	8
Onychomycosis	4	1	0	5	5
Subungual hyperkeratosis	1	1	0	2	2
Paronychia	0	2	0	2	2
Total	21	6	0	27	27

Candidiasis were most commonly observed in oral lesions which was of mainly pseudomembranous type (26%) with mainly cD4 count <200 cells/ μ l [Table 6].

Table 6: Distribution of cases according to oral manifestations & CD4 count

Oral Lesions	CD4 count			Total	Percentage
	<200	200-500	>500		
Candidiasis	20	6	0	26	26
Pigmentation	3	1	0	4	4
Angular stomatitis	3	0	1	4	4
Herpes labialis	2	0	0	2	2
Total	28	7	1	36	36

DISCUSSION

In HIV, chronic stimulation of the immune system causes inappropriate immune activation and progressive exhaustion of the immune response. Epidermal langerhans cells may become infected by HIV, and decreased langerhans cell function could account for some of the cutaneous manifestations of HIV disease.^[2]

Evidence that properties of the skin immune system were distorted during the course of HIV infection came initially from the observation that the number of langerhans cells in decreased in patients with AIDS.^[7] Subsequent research found that in addition to CD4 T - helper lymphocytes and monocytes, dendritic cells which also express CD4 were important targets in HIV infection.

Seborrhoeic dermatitis was present in 10% of patients in the present study. In various Indian studies, its occurrence varies from 3%^[8] to 21.4%.^[9] This still does not compare to the incidence in the west as reported by smith et al^[10] in which they found an incidence of 53%. In HIV infection, the decline of the immune system is the major cause of the high incidence of seborrhoeic dermatitis.^[11]

Xerosis was seen in 5% of patients in this study. Prevalence of xerosis in various studies ranged from 5.3% to 73%.^[12,13] Ichthyosis has been reported in 3.3% to 14.3% of patients in various studies.^[8] When the CD4+ cell count drops below 50cells/mm³, generalized acquired ichthyosis with large fish scales may develop beginning on the legs.^[4]

Lesions of Pruritic Papular eruption were confined to extremities in 85% of patients. In a study done by Colebunders et al 95% lesions were found on arms and legs.^[14] Hyperpigmentation was generalized in most of the patients, more predominantly over sun exposed areas like face, upper back, forearms. Diffuse hyperpigmentation reported in various studies ranges from 3.6% to 35.9%.^[9,10,15-17]

Adverse Drug reactions was present in 7% in this study. Other studies reported higher percentage than our study, such as Munoz-Perez et al - 14%,^[18] Tschachler et al - 43%.^[19] Diffuse alopecia in various studies ranges from 3.9% to 10%.^[15,16] Bluish discoloration of nails was seen in 10% patients, less than in study done by Smith et al was 15%.^[10] In this study 26% had oral candidiasis of

which 82% has pseudomembranous variety, followed by atrophic (10%) and 4% angular cheilitis and hyperplastic variety. Many of the changes of skin, hair, nail and also oral manifestations were presented among HIV patients with CD4 count <200 cells/mm³. Frequency of varied manifestations increased with the fall of CD4 count.

CONCLUSION

HIV patients with low CD4 count presented with various clinical problems related to their skin, hair, nails and also oral cavity. In resource crunched country like India, where only a limited number of patients reach the means to get a CD4 count done, the study of skin diseases as a window to the level of immunosuppression, gains marked importance. Correlating 'CD4 counts' to 'skin lesions' could serve as a guide to start and monitor antiretroviral therapy and to find the prognosis of the diseases.

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