

## **A Clinicopathological Study of Mucocutaneous Lesions in Correlation with CD4 Counts in HIV Seropositive Cases at a Tertiary Care Centre in South India**

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### **ABSTRACT**

**Background:** Mucocutaneous lesions are one of the first clinical presentations of immunosuppression in Human Immunodeficiency Virus (HIV) seropositive patients that manifest at different stages of the infection that requires early diagnosis along with prompt treatment(1).

**Objectives:** (1) To study the prevalence of mucocutaneous manifestations in HIV-seropositive patients attending the ART center of our hospital in Visakhapatnam, Andhra Pradesh. (2) To correlate mucocutaneous manifestations with CD4 cell counts.

**Materials and methods:** 150 HIV positive patients above 18 year old with definite cutaneous manifestations attending ART center and OPD in the Department of Dermatology and venereology in a tertiary care centre Visakhapatnam (Andhra Pradesh, India) were studied from May 2020 to May 2021.

**Results:** Out of 150 HIV patients, who aged 20 -80 years with a mean age of 25, (23.8%) were 60 (40%) female and 90 (60%) were males, majority of the patients were labourers 50 (33.3%) by occupation, 41 (27.3%) had CD4 counts < 200, 73 (48.6%) had CD4 counts of 200–500, and 54 (36%) had CD4 counts > 500. The most common dermatological presentation was pruritic papular eruptions 24 (16.%) followed by cutaneous drug reaction 19(12.67%) and scabies 12 (8%).

**Conclusion:** At the end of study we concluded that cutaneous manifestations can be considered as good clinical indicators for the progression of disease and underlying immune status in resource poor settings.

**KEYWORDS:** Clinicopathological, CD4, HIV

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### **INTRODUCTION**

HIV infection was recognized as an emerging disease in the early 1980s which still persists in the 21st century and continues to be a major challenge in the field of medical sciences causing significant morbidity and mortality despite tremendous development in the field of medicine. As per the recently released data, India HIV Estimates 2017 report, national adult (15–49 years) HIV prevalence in India is estimated at 0.22% (0.16% – 0.30%) with 0.25% (0.18-0.34) among males and 0.19% (0.14-0.25) among females. The adult HIV prevalence at national level has continued its steady decline from an estimated peak of 0.38% in 2001-03 through 0.34% in 2007, 0.28% in 2012 and 0.26% in 2015 to 0.22% in 2017. Among the States/UTs, in 2017, Mizoram has

shown the highest estimated adult HIV prevalence of 2.04% (1.57-2.56), and Andhra Pradesh 0.63%, 0.47-0.85 (2).

In HIV infection, skin becomes vulnerable to neoplastic disorders and opportunistic infections due to reduction in the number of antigen-presenting cells and CD4 lymphocytes. In general skin manifestations appear in 80-90% of HIV patients which are chronic, recurrent, resistant to therapy and hence affect the quality of life(3). Cutaneous manifestations are numerous in HIV and indicate the level of immunosuppression. Diseases such as mollusca contagiosum, oral hairy leukoplakia, oral candidiasis, chronic ulcerating herpes simplex, and kaposi's sarcoma (KS) are strongly associated with HIV and progressive

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immunodeficiency. In the past decade, highly active ART has greatly changed the course of HIV infection by strengthening the immune system and reducing skin symptoms. On the other hand, sexually transmitted infections are on the rise, especially among homosexual men with HIV(4).

Cutaneous disorders occur with increasing frequency as HIV infection clinically advances and immune function deteriorates. Monitoring of HIV infection includes routine clinical assessment and measurement of CD4 cell count and plasma viral load. Absolute CD4 count has been the most widely used predictor of progression to AIDS(5). Keeping in mind the large number of patients suffering from HIV infection reporting at our hospital, this study is undertaken with a view to understand the correlation of various cutaneous manifestations with CD4 and CD8 cell counts in HIV patients.

### MATERIALS AND METHODS

This is a prospective observational study, conducted in a tertiary care centre Visakhapatnam (Andhra Pradesh, India) from May 2020 to May 2021. HIV infected patients attending to the Dermatology OPD and patients referred from various departments with cutaneous manifestations were included, whereas the patients with no definite cutaneous manifestations or only mucosal manifestations, or

manifestations due to drug interactions were excluded from the study. Routine investigations, complete clinical history, systemic and dermatological examination were done. CD4+ cell count was done by flow cytometry. Tzanck smear, KOH mount, punch/ incisional/ excisional biopsy of the lesion were done by Histopathological examination in the pathology department of our hospital. Correlation of cutaneous manifestations related with HIV infection was made with CD4+ and CD8+ T cell counts at the end of study

### RESULTS

Out of the 150 HIV patients, who aged 20 -80 years with a mean age of 25, (23.8%) were 60 (40%) female and 90 (60%) were males. Majority of the patients were labourers 50 (33.3%) by occupation with heterosexual 65 (43.3%) being the most common route of transmission followed by homosexuals 55 (36.7%) and malaise being the most common symptom 50 (33.3%) .

Out of 150 patients, 41 (27.3%) had CD4 counts < 200, 73 (48.6%) had CD4 counts of 200–500, and 54 (36%) had CD4 counts > 500. The most common dermatological presentation was pruritic papular eruptions 24 (16%) followed by cutaneous drug reaction 19(12.67%) and scabies 12 (8%).

**Table 1: demography parameters :(n=150)**

<b>AGE</b>		
<20	1	0.6%
21- 30	40	26.6%
31- 40	70	46.5%
41-50	30	20%
51-60	5	3.3%
61-80	4	3.3%
<b>Sex distribution</b>		
Male	90	60%
Female	60	40%
<b>Occupation</b>		
Unskiled Labour	50	33.4%
Driver	31	20.6%
Skilled Labour	30	20%
House Wife	10	6.8%

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Hotel Worker	20	13.3%
Farmer	3	2%
Student	4	2.6%
Other	2	1.3%
<b>Route Of Transmission</b>		
Hetero Sexual	65	43.3%
Homo Sexual	55	36.7%
Blood Transfusion	10	6.7%
Occupational	15	10%
IV Drugs	5	3.3%
<b>Symptoms</b>		
Malaise	50	33.3%
Fever	28	18.7
Weight Loss	40	26.7%
Cough	4	2.7%
Mental Changes	5	3.3%
Diarrhoea	7	4.7%
Itching	15	10%
Clubbing	1	0.6%

Cutaneous manifestations	No of cases	Percentage	CD4 >500	CD4 200-500	CD<200
Pruritic papular eruptions	24	16 %	20	10	4
Cutaneous drug reaction	19	12.67%	1	10	8
Molluscum contagiosum	9	6%	5	4	0
Psoriasis	8	5.3%	0	5	3
Seborrheic dermatitis	6	4%	0	3	3
Eosinophilic folliculitis	4	2.6%		2	2
Dermatophyte infection	8	5.3%	0	5	3
Cutaneous cryptococcus	1	0.6 %	0	0	1

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Staphylococcus infection	10	6.6%	6	1	3
Leprosy	9	6%	5	3	1
Erythema multiforme	6	4%	2	6	1
Xerosis	2	1.3%	0	1	1
Herpes zoster	10	6.6%	5	5	0
Herpes simplex	6	4%	1	6	4
Verruca vulgaris	5	3.3%	4	1	0
Cutaneous tuberculosis	6	4%	0	3	3
Vasculitis	1	0.6%	1	0	0
Scabies	12	8 %	0	6	6
Contact dermatitis	4	2.6%	2	2	0

### DISCUSSION

Diagnosis of cutaneous disease in HIV can be challenging, as some present with stereotyped lesions, whereas others have highly variable manifestations, creating diagnostic uncertainty that may require specialist consultation. The approach to diagnosis of skin lesions includes the assessment of location, extent, primary lesions, and secondary changes along with the severity of immunosuppression. Skin disorders are classified as primary and secondary in HIV-infected patients. While the pathogenesis of the secondary skin lesions (including opportunistic infections and malignant skin cancers) is associated with decreased CD4 counts, the origin of the primary cutaneous disorders is still being investigated [5]. Monitoring of HIV infection includes routine clinical assessment and measurement of CD4 cell count and plasma viral load. Absolute CD4 count has been the most widely used predictor of progression to AIDS.(7)

In our study, the patient age group ranged from 14 to 80 years, with the most common affected age group being 31- 40 years, 70 (46.5%) and mean age was 25 years which were similar to sharma et al (8) and kumari et al (9). Males 90 (60%) were more affected than females 60 (40%), and male is to female ratio is 3:2 which is similar to mina et al (10). Moreover studies carried out by Kumarswamy et al and Raju et al (11,12) reported male to female ratio of 2:1 & 2.4:1 respectively which was similar to our study and correlates well with the fact that heterosexual route of transmission accounts for majority of cases of HIV infection in India. This distribution differed from a study carried out in United States by Smith et al(13) who reported

a male to female ratio of 9:1 as homosexual behaviour is a common mode of transmission in USA. Unskilled labourer and drivers who lived away from home for work were more prevalent in our study 50 (33.4%) followed by drivers 31(20.6%), skilled workers 30(20%), housewives 10 (6.8%), farmers 3(2%), student 4 (2,6%) and others 2(1.3%). Our findings was in contrast to findings of study carried out in Mangalore by Bhandary et al who reported high prevalence among skilled labourers (56.25%) (14). Heterosexual route was the most common mode of transmission 65 (43.3%), followed by homosexual 55 (36.77%), blood transfusion 10 (6.7%) and multiple risk factors which was compatible with the studies done by Singh et al(15) where they reported heterosexual route as most common route of transmission . Commonest presenting symptoms in our study was malaise 50 (33.3%) followed by weight loss 40 (26.7%) fever 28 (18.7%) whereas study conducted by Chacko et al(16) reported most common symptom of weight loss (62%) followed by fever (56%) which might be due to our study was carried out in dermatology department and many of our patients self referred themselves to medicine department for constitutional symptoms.

In our study, 43 28.6 % (81) patients had CD4 cell count <200 cells/mm<sup>3</sup> among which common cutaneous manifestation were cutaneous drug reaction, 8 (18.6%) scabies 6 (14%) herpes simplex 4(9.3%) pruritic papular eruption 4(9.3%) and have more than one cutaneous manifestation which suggest that coexistence of more than one cutaneous disorder could be a marker of a greater degree of immunosuppression. Liautaud et al and Goldstein et al reported PPE as the most

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common cutaneous disorder with prevalence of 46% and 11.4% respectively.(17,18). Similarly Raju et al reported Herpes zoster as the most common condition in their study with prevalence of 16%. Lowe et al. reported that seborrheic dermatitis, pruritic papular rashes, and muscolum contagiosum were most commonly seen in patients with lower CD4 counts(19). In the present study, no case of skin malignancy was observed which was consistent with the findings of Dwiyana and his colleagues [20]. Conversely, in a study conducted in Tanzania, Kaposi sarcoma was reported to be one of the most common cutaneous lesions in HIV-positive patients [21].

Lienhardt et al (22) reported increased frequency of relapse of leprosy in HIV patients as observed in one of our patients. In the present study, 6(4%) cases of cutaneous tuberculosis were seen and 9 (6%) of leprosy cases were seen. In CD4 > 500 , 20 cases were pruritic papular rashes, Mitsuyasu et al reported prevalence of cutaneous drug reactions (69%) associated with sulfamethoxazole-trimethoprim combination.(17).

### CONCLUSION

The present study demonstrated that mucocutaneous manifestations are common in HIV-positive patients, some of which could be applicable as useful clinical indicators to predict the immune status of the patients.therefore, regular skin examinations are recommended as routine HIV-infected patients' healthcare programs. Thus, patients with such skin complaints may be motivated to report for voluntary counseling and treatment . Furthermore this emphasizes the importance of health and sex education with proper models explaining the transmission of HIV in lower socio economic strata for prevention .

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