



## DERMATOLOGICAL MANIFESTATIONS IN HIV PATIENTS AND ITS CORRELATION WITH CD4 COUNT: A PROSPECTIVE STUDY

### Medicine

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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

**Aims and Objectives:** To study dermatological manifestations in HIV infected patients and to see the correlation with CD4 count.

**Materials and Methods:** One hundred and fifteen HIV patients were studied at ART Center Medicine Department, GR Medical College, Gwalior between Aug. 2014 to Nov. 2015. Detailed history regarding the epidemiological aspects of the disease (HIV infection) and the dermatological symptoms was taken and thorough physical examination of the patient was performed with emphasis on cutaneous manifestations.

**Results:** Male preponderance was observed (68.69%). Most of the patients were manual laborers (48.69%), belonged to urban population (74.78%), from lower income group (59.13%), were (88.69%) were married and had (38.26%) primary education. Most of the patients (50.43%) had CD4 count between 200-350. Among viral infection herpes zoster, molluscum contagiosum, herpes genitalis and herpes labialis had CD4 count of 271, 291, 263 and 178 respectively. Among fungal infection candidiasis, and tinea corporis/cruris had CD4 count of 325 and 256 respectively. Pyogenic bacterial infections had CD4 count of 363 whereas patients with scabies had CD4 count between 200-380.

**Conclusion:** Skin problems were common among HIV positive patients. Patients with advanced stages of skin disorders had relatively lower CD4 counts. Therefore, examination of skin disorders, as early diagnosis and management of dermatologic problems will improve the quality of life in HIV positive patients.

### KEYWORDS

Skin infection, HIV positive, HIV infection, dermatological symptoms

### Introduction

About 39-46 million people in the world are currently living with HIV/AIDS and HIV infection poses a major public health problem worldwide. 3-6 Studies on different domains of internal medicine have been trying to look for correlation between CD4 cell counts and systemic changes.<sup>1</sup>

Skin involvement is common concern among HIV positive patients presenting with a variety of dermatologic manifestations. Among HIV infected individuals, skin diseases may be initial sign of immunosuppression. Skin manifestations have been shown to be valuable clinical indicator of HIV infection and associations have been established between some skin conditions and CD4 cell counts.<sup>2</sup>

The normal absolute CD4 count in adolescents and adults ranges from 500 to 1500 cells per mm<sup>3</sup> of blood. In general, the CD4 (%CD4+ or absolute count) progressively decreases as HIV disease advances. Low CD4 cell count is associated with a moderately higher risk for disease progression among HIV positive patients.<sup>1,3</sup>

Several studies have shown that association of skin disorders with HIV infection can serve as an indicator for advanced HIV infection, immunosuppression and decreased CD4 cell counts. The aim of this study was to determine the prevalence of dermatologic problems in HIV positive patients and their relationship to CD4 cell counts.

### Materials and Methods

Present study was performed on 115 HIV positive patients attending the ART Center Medicine Department, GR Medical College, Gwalior between Aug. 2014 to Nov. 2015.

Institutional Ethics Committee approval and written informed consent was obtained from each patient before starting the study.

In all selected patients, detailed history regarding the epidemiological aspects of the disease (HIV infection) and the dermatological symptoms was taken and thorough physical examination of the patient was performed with emphasis on cutaneous manifestations.

The clinical diagnosis of cutaneous lesions was supplemented with relevant laboratory investigations such as: 10% KOH mount under the microscope for mycological examination. Gram staining was done for

the diagnosis of urethritis, vaginal discharges, genital ulcers and pyodermas. Tzanck smear was done for genital herpes, herpes zoster, vzv infection etc. Leishmans staining was done for demonstration of donovan bodies, venereal disease research laboratory test (VDRL) and skin biopsy in selected cases. Diagnosis of HIV seropositivity was done using Bioline HIV 1/2 Rapid Test Procedure, COMBAIDS HIV 1+2 Immunodot Test and Qualpro HIV-Qualitative Sandwich Immunoassay. Calculation of CD4 count was done using FACS (fluorescence activated cell sorter count system) caliber method. The test was done within 48 hours of collection of blood.

All the collected data was analyzed using IBM SPSS ver.20 software. Cross tabulation and frequency distribution was used to prepare tables. Data is expressed as percentage and mean  $\pm$  SD.

### Results

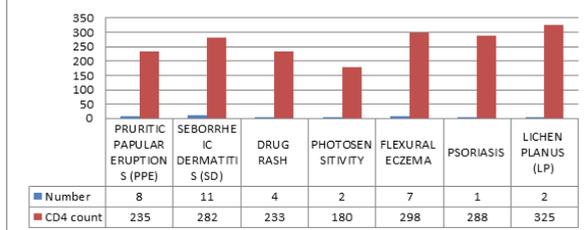
Most of the HIV patients were male (68.69%) belonging to age group of 31-40 years (42.60%). Most of the patients were manual labourers (48.69%), belonged to urban population (74.78%), from lower income group (59.13%), were married (88.69%) and had (44, 38.26%) primary education. Out of 115 HIV positive patients, majority of the patients had CD4 counts (50.43%) between 200-350, 23 (20%) had <200 CD4 count, 25 (21.73%) had between 350-500 and 9 (7.82%) patients had > 500 CD4 count.

All the infectious disorders were further sub divided based on their etiology into viral, fungal, bacterial and parasitic disease. Parasitic infections were the most common (38.26%), followed by non infectious (30.43%), fungal infections (13.91%), viral infections (11.30%) and bacterial diseases (6.08%).

**Table 1: Diseases occurring in the study group and their mean CD4 counts**

Disease	N	Cd4 count
Viral	Herpes Zoster	271
	Molluscum Contagiosum	291
	Herpes Genitalis	263
	Herpes Labialis	178
Fungal	Candidiasis	325
	Tinea Corporis & Cruris	256
Bacterial	Pyogenic Bacterial Infection	363
Parasitic	Scabies	200-380

**Graph 1: Non-infectious diseases occurring in the study group and their CD4 counts**



## Discussion

The dermatological manifestations in HIV patients, including many opportunistic infections, are very common.<sup>4</sup> Results of the present study showed several facts about HIV in the population of Gwalior area.

Out of 115 HIV positive patients, majority of the patients (50.43%) had CD4 counts between 200-350, 20% had <200 CD4 count, 21.73% had between 350-500 and 7.82% patients had > 500 CD4 count whereas Premanadham et al showed that most of the patients (57.5%) had CD4 counts <200.<sup>5</sup> Previous studies showed that CD4 counts <200 cells/mm<sup>3</sup> were associated with more number of infectious lesions.<sup>6,7</sup> whereas in present study 20% had CD4 count <200. The dermatological manifestations increase both in frequency and severity with the progression of HIV and decline in CD4+ cell counts which was similar to many previous studies.<sup>8,9</sup>

Parasitic infections were the most common (38.26%), followed by non infectious (30.43%), fungal infections (13.91%), viral infections (11.30%) and bacterial diseases (6.08 %). Contrary to present study Premanadham et al found fungal infection as the most common infectious etiology of skin problems.<sup>5</sup> But in other studies, fungal, viral and bacterial infections together with neoplasia were common causes of skin diseases.<sup>3,10</sup>

About half of patients (50.43%) had CD4 count between 200-350. Among viral infection herpes zoster, molluscum contagiosum, herpes genitalis and herpes labialis had CD4 count of 271, 291, 263 and 178 respectively. Among fungal infection candidiasis and tineacorporis and crurishad CD4 count of 325 and 256 respectively. Nichols *et al.* stated that bacterial infections in AIDS were often under represented. In present study pyogenic bacterial infection had CD4 count of 363 whereas patients with scabies had CD4 count between 200-380. Kaplan *et al.* reported four cases of scabies who presented with pruritic dermatitis.<sup>11</sup> Previous studies showed that CD4 counts <200 cells/cumm were associated with more number of infectious lesions.<sup>4,7,12</sup> Muñoz-Pérez et al stated that various dermatoses such as genital herpes, tinea, Kaposi's sarcoma, xerosis, HSV, drug eruptions, candidial folliculitis, M. contagiosum, psoriasis, abscess, verruca vulgaris, PPE, oral hairy leukoplakia and seborrheic dermatitis could be used as clinical markers of disease progression due to their strong association with CD4 counts<sup>13</sup>. Chawhan *et al* also reported that most of their patients (59%) patients had CD4 counts <200.<sup>2</sup> However Smith *et al.* failed to find consistent increased occurrence of HPV infection with advancing stage.<sup>14</sup> In a study in USA the most common conditions were dermatophytosis (34%), oral hairy leukoplakia (23%) and folliculitis (19%).<sup>15</sup> Sivayathorn reported several conditions with prevalence rates higher than 5% including oral candidiasis (34.3%), pruritic papular eruption (32.7%), seborrheic dermatitis (21.0%), herpes zoster (16.1%), oral hairy leukoplakia (14.9%), herpes simplex (10.9%), onychomycosis (9.3%), cutaneous ringworm (7.7%), psoriasis (6.5%) and folliculitis (5.6%)<sup>15</sup>. Almost similar reports were revealed in present study. Most of the cases of PPE in our study were seen with CD4 counts more than 235 cells/cumm. We have found only 8 cases, which was similar to other studies in India (Mumbai 3%) and Asia (Thailand 4.7%) indicating low incidence in Asian patients.<sup>16,17</sup>

## Conclusion

Dermatological manifestations are seen at every stage of HIV/AIDS and are often the presenting features. While some skin manifestations are nearly exclusive to HIV/AIDS cases, many are found in general population. HIV infected individuals often have increased prevalence, severity, atypical presentation or difficulty with treatment of diseases. Thus some of these skin manifestations not only act as markers of HIV but also can predict the underlying immune status.

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