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Dermatological Complications despite of Lower CD4 Count in HIV Infected Patients

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ABSTRACT

The present study attempts to know the prevalence of different association with dermatological complication in HIV infected patients. Results revealed that, the overall prevalence of skin lesions in the age group 20-55 years of HIV infected patients was (36.0%), the scabies is the most communist manifestations in the study population it was expressed (40.0%) with mean CD4 count was <225 µ/dL ($p<0.01$) (87.0%) PLHIVs were followed by hazard rate of dermatological complications Hz: 0.89 $p<0.01$; the mean CD4 count was 250µ/dl at the time of infection. Kaposi's sarcoma (6.33%) $p>0.01$; drug eruptions (6.0%); papular pruritic eruptions (7.67%) $p<0.01$; nail pigmentations (10.50%) $p<0.01$ and fungal infections-Candida (15.33%) $p<0.01$; lichenoid eruption (6.33%) and herpes simplex only one case was seen (1.67%) $p>0.01$. An early initiation of HAART (Highly active antiretroviral therapy) will maintain the better CD4 count, lack of malnutrition and cleanliness are the important factors to be taken care of HIV infected population. The most common dermatological manifestation was herpes zoster, nail pigmentation and scabies etc.

Keywords: Herpes zoster, HAART, CD4, RNA plasma viral load

INTRODUCTION

Skin disorders are commonly encountered in HIV-infected patients and they may be the first manifestation of HIV disease. Up to 90% of HIV-infected persons suffer from skin diseases during their course of illness [1]. In a local cross-sectional study of 186 HIV positive patients, 175 (94%) suffered from one or more cutaneous disorders [2]. The most common skin disorder identified was fungal infection, followed by eczema and seborrhoeic dermatitis. In the advent of HAART has changed the spectrum of skin disorders by improving host immunity, which in turn declines the occurrence of Kaposi's sarcoma and some of the skin infections [3]. However, the restoration of immunity will cause flare-up of herpes zoster. HIV-infected patients are more likely than the general population to suffer from adverse drug reactions. The skin diseases are rarely life-threatening, but many of them are life-ruining. While the lifespan is prolonged by the use of HAART, numerous HIV-infected patients were exhibits manifestation by drug-induced facial lipoatrophy and skin manifestations, not only can there be cosmetic disfigurement, the intense pruritus due to eosinophilic folliculitis is severely impairing the patients' quality-of-life (QOL). Therefore, the management of these apparently minor conditions should not be over looked. In most of the cases, the treatment modality of skin diseases among HIV-positive patients is very similar to that in HIV-negative ones. However, prolonged high-dose systemic steroid should be used with caution because of the immunosuppressive effects. Although phototherapy can alleviate the pruritus or improve psoriasis in PLHIVs, its use is hampered by its up regulation of HIV transcription.

MATERIALS & METHODS

An observational study was conducted at Department of Dermatology and Venerology, KIMS Bengaluru during the period 2014-2015. PLHIVs who are received on 'HAART' with the age group 20-55 years were considered for the study population. The following inclusion and exclusion criteria were taken in to consideration. Inclusion; the patients with reliable dermatological complications age group 20-55years, family history and other associated parameters were included. Exclusion; patients who are not regular follow up of HAART, treatment, lost to follow up, ART treatment received from outside the country and congenital anomalies were excluded from the study population. The demographic

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profile, patient history and treatment follow-up records were recorded in a separate master chart by using pretested questionnaires. The final outcomes like morbidity, mortality, complications were correlated between age and sex matched frequency respectively. Sample size determination derived based on the following formula n=p/q x 1/α^2 , where, P=the treatment success and q=treatment failure has been fixed 0.20 and 0.80 respectively with desired level of significance 5% level (α=0.05) n=0.20/0.80 x 1/〖0.05 〗^2 = n=150 patients. The collected data was analysed by using SPSS - 16.50 software version, the following statistical methods were used to test the hypothetical results. Univariate analysis, receiver operating characteristic curve and logistic regression analysis.

RESULTS

A total of 150 patients were considered for the study population, the male comprises of 56.67% and female comprises of 43.33%; the sex ratio was 1.1. The mean age of the patient was 43.16 years. Age group between 20 and 35 years comprises of 63.33% with mean age of 32.16 ± 1.26 years and age class 36-55 years comprises of (36.67%) with mean age was 33.44 ± 0.26 years respectively. Majority of the cases had family history (96.67%). The mean duration of HAART treatment was 84.56 months with SD 2.56 months **(Table 1)**. Family history p<0.01, mean duration of HAART p<0.01, age of patient p<0.01 were found to be statistically significant.

Table 1. Descriptive statistics of HIV infected people.

Parameters	**No (%)** **n=150**	**P-value**
(i) Gender		
Male	85(56.67%)	0.00
Female	65(43.33%)	0.00
(ii) Age		
25 to 35 years	95(63.33%) 32.16 ± 0.98	0.00
36-55Years	55(36.67%) 42.18 ± 1.25	0.00
(iii) Family history		
Sero +VE infected	145(96.67%)	0.00
Sero -ve	05(3.33%)	0.23
Mean duration of HAART(months)	84.56 ± 2.56	0.00

As per the resulted findings, the lower economic status p<0.01, lack of literacy p<0.01 was significantly associated with geometric progression of HIV. The family history is the most signifying factor to increase the overall prevalence rate of various dermatological complications among HIV infected patients. Clinically the present study has been an attempt to correlate WHO clinical staging and various dermatological complications. The WHO stage expressed between (2-25%, p<0.01; stage II-30% p<0.01 stage IV-55% p<0.01). The complications will exhibit many skin related complications irrespective of age and gender wise population. The worsening of complications were seen in lower CD4 count (150 µ/dl) and high RNA plasma viral load (>150000 copies per ml), the incidence drastically drew up during the inception of HAART and followed up to two years of HAART treatment follow up.

The dynamism of CD4 count and RNA plasma viral load presented in the **Figure 1**, the results revealed that, the mechanism of virus becomes debilating in nature, an early stage, the virions showed geometrically progressed in the human system and it will reduce the immunity of the PLHIVs, the resulted reduction of immunity has shown drastic reduction of the immunity among the infected children as well as adult population. Since it will exhibit clinical and dermatological complications. **Figure 1** clearly depicted that, an early stage of infection or at the time of inception of HAART, CD4 counts were seen low rate, the mean CD4 count was 412 µ/dl, CD4 follow up at 3

months,12 months and 24 months, CD4 count is drastically increased with fewer RNA plasma viral load expression. At the time of inception of HAART, the prevalence of dermatological complications was seen numerically doubling with high plasma viral load.

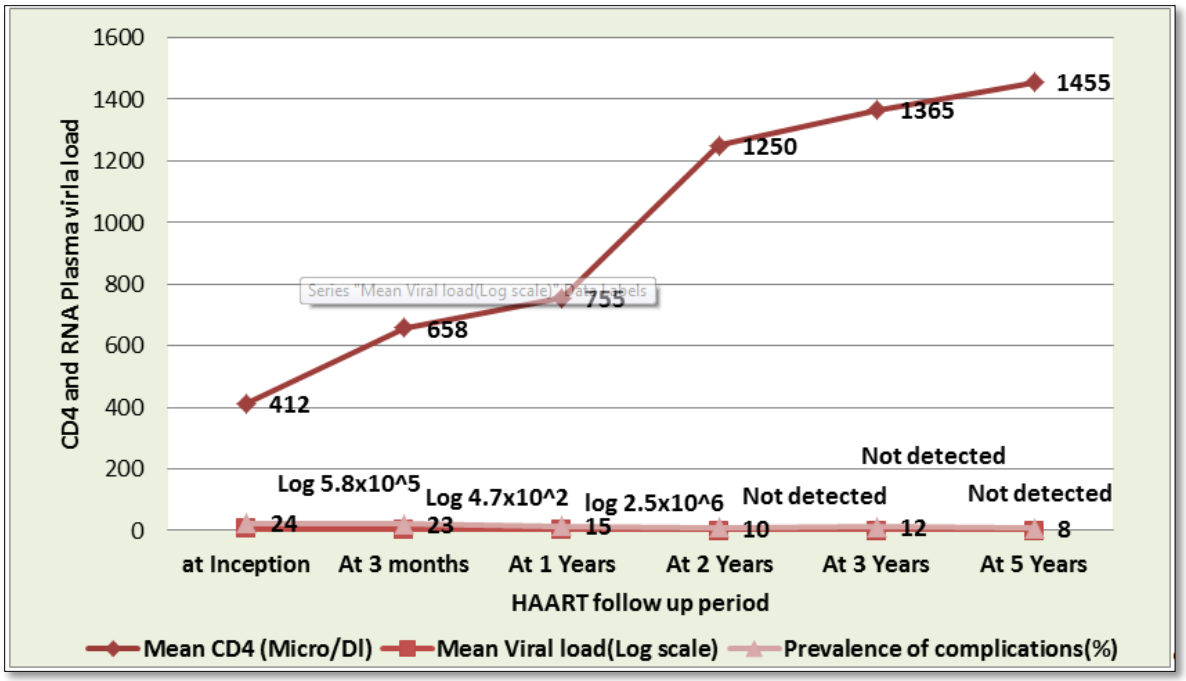

Figure 1. Dynamisms of CD4 and RNA plasma viral load on subject to dermatological complications.

Table 2 describes the various dermatological complications with respect to base line CD4 count and mean CD4 count at the end of the study period. The present study documented that, the various prevalence of skin lesions was found in the age group 20-55 years of HIV infected patient, the scabies is the most communist manifestations in the study population it was expressed (30.0%) with mean CD4 count was 243 µ/dL followed by Hz (16.67%); CD4 count was 247 µ/dl, Kaposi's sarcoma (1.33%); drug eruptions (8.0%); papular pruritic eruptions (4.67%); nail pigmentations (8.0%) and fungal infections-candida (5.33 %); lichenoid eruption (3.33%) and herpes simplex only one case was seen (0.67%).

Table 2. Various dermatological complications (n=150).

Complications	Number of cases	CD4 count at on set CD3:CD4%	Mean CD4 count	P-value
Herpes simplex	01(0.67%)	<25%	158	0.85 ns
Herpes zoster	25(16.67%)	35%	247	0.00**
Fungal infections: Candida,	08(5.33%)	<25%	236	0.08 ns
Nail pigmentations	12(8.00%)	<25%	228	0.00**
Scabies	45(30.00%)	30%	243	0.00**
Kaposi's sarcoma	02(1.33%)	12%	142	0.57ns
Drug eruptions	12(8.00%)	18%	148	0.00**
Papular pruritic eruptions	07(4.67%)	31%	185	0.46ns

***Significant at 1% level (p<0.01)*

DISCUSSION

Although HIV-1 is particularly tropic for CD4 T lymphocytes, monocytes, macrophages and central nervous system cells that express CD4 receptors; abnormalities in humoral immunity may precede the development of the more charectistic ones of cell-mediated immunity cells from HIV infected patients demonstrated polyclonal and hyper proliferations with hyper secretions of polyclonal immunoglobulins [1,4,5,6]. The suppressor CD8 +lymphocyte usually increase in number initially, resulting in a decrease of the normal CD4+ to CD8+ratio and are not depleted until late in the diseases. The most severely affected cells are the CD4 lymphocytes, whose function and numbers steadily showed declining trend as the disease progression upward and complication of skin lesions were seen among PLHIVs. CD4 cells are seriously imparted by HIV infection. As HIV infection progress starts, the skin diseases gradually become more aggressive and widespread throughout the body system, with a higher rate of recurrence and refractory disease [1,2,7,3,5]. Therefore, HIV/AIDS-related skin lesions are often important indicators for the clinician as to the presence of HIV infection and the development of AIDS [2,4]. Some infectious molluscum, herpes simplex, herpes zoster pyoderma **(Figure 2)**, candidiasis, scabies. Noninfectious, xerosis, hyperpigmentation, lichenoid, aphthous ulcer, papulopruritic were seen in patients with severe immunosuppression (CD4+ count, <150/µl) [8-12]. Molluscum and xerosis was observed in patients at all stages of HIV infection with frequent recurrence of lesions and post herpetic neuralgia [13-16]. The extent and severity of recurrence was correlated with immune status where patients with clinical AIDS sometimes had disease in bilateral peripheral nerves [17]. Historically, Hz was thought to be an indicator of an underlying malignancy, especially acute lymphatic leukemia, whereas recent studies were shown, increases in the incidence of malignancy in PLHIVs with Hz as reported in our study [18-20].

Figure 2. Herpes zoster (CD4 247µ/dL).

CONCLUSION

The overall study indicates that, the HIV infected persons are more easily susceptible to skin disorders with inception of HAART at lower CD4 count (<200 µ/Dl). Clinical examination is very much required for PLHIVs as their immune systems drops. An early initiation of HAART, maintain the better CD4 count. The lack of malnutrition and cleanliness are the important factors to be taken care in HIV infected population. The most common dermatological manifestation seen is molluscum, xerosis and papulopruritic.

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