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### **Dermatology Life Quality Index in Patients Infected with HIV: A Comparative Study**

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#### **Abstract**

##### *Background*

HIV-infected patients with skin diseases have impaired dermatology quality of life due to severe and refractory nature of dermatoses occurring in them but literature on this aspect is sparse.

##### *Aims*

To assess the dermatology life quality index (DLQI) in HIV-infected patients with skin diseases and to assess the effect of antiretroviral therapy (ART) on DLQI.

##### *Material and methods*

A hospital based comparative study was conducted involving 40 adult HIV-infected patients with skin disease and 40 age- and sex-matched controls using DLQI questionnaire devised by Finlay et al.

##### *Results*

Each group had 14 males and 26 females. Of the 40 cases, 35 were on antiretroviral therapy. Most common skin diseases in HIV cases was pruritic papular eruption of HIV (18/40, 45%) followed by infections (12 cases, 30%) whereas in the controls these were eczema (13/40, 32.5%) followed by polymorphic light eruption (6 cases, 15%). The mean DLQI score in the cases and controls were  $8.73 \pm 3.922$  and  $8.45 \pm 4.032$ , respectively (not statistically significant). The mean DLQI score in cases

on ART and not-on-ART were  $8.46 \pm 4.01$  and  $10.6 \pm 2.88$  respectively (statistically not significant).

### ***Conclusion***

DLQI score in HIV-infected patients was not significantly different from the comparison group. ART marginally improved DLQI.

### **Introduction**

More than 90% of HIV infected patients develop dermatologic disorders (some of which are AIDS- defining illness) during the course of their HIV infection. Dermatological manifestations in HIV patients are often more severe, atypical, and less responsive to therapy than in HIV-negative patients, which adversely affects the quality of life in the sufferers. [1] Administration of antiretroviral therapy (ART) and treatment of opportunistic infections can significantly improve their quality of life.

Quality of life indices are measures of health that incorporate patients' perspective of their physical, social and psychological well-being. Because this perspective can differ significantly from physicians' point of view, quality of life indices complement conventional assessment measures such as mortality, length of hospital stay, and therapeutic complications. The importance of these indices in dermatology is underscored by the fact that skin diseases affect appearance, self-esteem, and morbidity more than conventional outcome measures. [2]

The literature on dermatology life quality in HIV-infected patients with skin disease is sparse as indicated by the paucity of such studies in the literature. We proposed to carry out a study on dermatology life quality index (DLQI) in HIV-infected patients with skin disease to gather appropriate data for devising measures to improve their dermatology life quality, as the purpose of investing on HIV-care is to reduce the suffering and improve the quality of life which is rewarding if it can be improved even for a short period.

### **Aims and objectives**

1. To assess the dermatology life quality index (DLQI) in HIV-infected patients with skin diseases compared to a control group from the general dermatology out patient department (OPD).
2. To assess the effect of antiretroviral therapy (ART) on DLQI by comparing the DLQI of HIV-infected patients with skin disease on ART with that of HIV-infected patients with skin disease not on ART.

### **Material and methods**

This was a hospital based comparative study conducted in the department of dermatology, Government General Hospital, Puducherry which runs the ART centre. The patients were enrolled into the study after explaining about the study and

obtaining a written informed consent to participate in it. Strict confidentiality about the patients' details was maintained at all times.

The study included 40 HIV-infected patients with skin disease above 18 years of age and 40 age and gender-matched patients with skin diseases attending the dermatology OPD who were known not to be infected with HIV.

Relevant data like age, sex, duration of HIV-infection, latest CD4+ count details of antiretroviral therapy (if on ART), diagnosis and duration of skin disease present were collected in a proforma after a dermatologic examination that was conducted by a qualified dermatologist.

All cases and controls were assessed for DLQI using the standardized questionnaire which was developed and validated by Finlay et al to be used in patients with skin disease. [3]

The study was approved by the Institute ethics committee at Indira Gandhi Medical College & Research Institute, Puducherry.

Statistical analysis was performed using SPSS (version 17, SPSS Inc. Chicago, Illinois, USA) and Graphpad (version 3.06, Graphpad software). Descriptive statistics (mean, standard deviation and percentage) were reported and Student's t-test was done to compare the means of various groups.

## **Observations and results**

Of the 40 patients in each group 14 were men and 26 were women. The mean age and SD of the cases and controls were was  $40.40 \pm 8.5$  years and  $40.65 \pm 8.7$  years respectively. Forty five percent of the cases were illiterate whereas 25% of the controls were illiterate. Out of 40, 39 cases and 13 in the control group were below poverty line, respectively.

### ***Duration of HIV-infection***

The mean duration and SD of HIV infection after diagnosis was  $29.77 \pm 21.17$  months. The range being 3 months to 6 years.

### ***HIV-infected cases***

Of the 40 cases, 35 were on antiretroviral therapy, whereas 5 were not.

### ***Combination drugs for ART***

1. Stavudine, lamivudine and nevirapine: 21 patients.
2. Stavudine, lamivudine and efavirenz: 6 patients.
3. Zidovudine, lamivudine and nevirapine: 5 patients.

4. Zidovudine, lamivudine and efavirenz: 3 patients.

#### *Skin disease in cases and controls*

The most common skin diseases in the HIV cases was pruritic papular eruption of HIV (18/40, 45%) followed by infections (12 cases, 30%) whereas in controls these were eczema (13/40, 32.5%) followed by polymorphic light eruption (6 cases, 15%) (Table 1).

<b>Dermatoses in cases:</b>	
Pruritic papular eruption of HIV	18
Dermatophyte infections	7
Xerosis	4
Pyoderma	3
T. versicolor	2
Eczema	2
Miliaria	2
Lipodystrophy	1
Polymorphic light eruption	1
<b>Dermatoses in controls:</b>	
Eczema	13
Polymorphic light eruption	6
Generalized pruritus	4
Psoriasis	3
Dermatophyte infections	3
T. versicolor	2
Urticaria	2
Lichen planus	1
Miliaria	1
Xerosis	1
Acneiform eruption	1
Bullous pemphigoid	1
Dermatoses papulosa nigra	1
Plantar wart	1

**Table 1.** Dermatoses in cases and controls

#### *Duration of dermatoses*

The mean duration of the dermatoses in the cases was 2.5 months (range being 3 days to 3.5 years) and that in controls was 5.9 months (range being 7 days to 5 years),

but the difference was not statistically significant (P value is 0.0850 by Student's t test). The mean duration of the dermatoses in the cases on ART was 1.34 months and that in those not on ART was 2.65 months.

#### ***CD4+ Count***

The mean CD4+ count in HIV-infected cases was  $458.5 \pm 254.2$  cells/mm<sup>3</sup>, range being 113 to 1310 cells/ mm<sup>3</sup>. The mean CD4+ count in cases on ART was 451.8 and that in those not on ART was 505.4 cells/mm<sup>3</sup>

#### ***Dermatology Life Quality Index***

The mean DLQI score in cases and controls were  $8.73 \pm 3.922$  (range, 2 to 19) and  $8.45 \pm 4.032$  (range, 1 to 16), respectively; however, the difference was not statistically significant (p value 0.7580 by Student's unpaired t test). The mean DLQI score in cases on ART was  $8.46 \pm 4.01$  and that in those not on ART was  $10.6 \pm 2.88$ , respectively; however, the difference was not statistically significant (p value 0.258 by Student's unpaired t test).

Table 2 shows score for individual components of the DLQI questionnaire in cases (including those on ART and those who are not) and controls. Using Student's unpaired t test, no statistically significant difference was found with any of the individual component of the questionnaire between 'cases vs. controls' and 'cases on ART vs. controls'.

Individual components of DLQI questionnaire	Mean DLQI score in Cases			Mean DLQI score in controls
	On ART	Not on ART	Total Score in cases	
1. Over the last week, how <b>itchy, sore, painful</b> or <b>stinging</b> has your skin been?	1.83	2.6	1.93	1.95
2. Over the last week, how <b>embarrassed</b> or <b>self conscious</b> have you been because of your skin?	1.51	1.6	1.53	1.4
3. Over the last week, how much has your skin interfered with you going <b>shopping</b> or looking after your <b>home</b> or <b>garden</b> ?	0.94	1.4	1	1
4. Over the last week, how much has your skin influenced the <b>clothes</b> you wear?	0.71	0.6	0.7	0.83
5. Over the last week, how much has your skin affected any <b>social</b> or <b>leisure</b> activities?	0.86	1.2	0.9	0.93
6. Over the last week, how much has your skin made it difficult for you to do any <b>sport</b> ?	0.11	0.4	0.15	0.13
7. Over the last week, has your skin prevented you from <b>working</b> or <b>studying</b> ? If "No", over the last week how much has your skin been a problem at <b>work</b> or <b>studying</b> ?	0.77	0.2	0.7	0.45
8. Over the last week, how much has your skin created problems with your <b>partner</b> or any of your <b>close friends</b> or <b>relatives</b> ?	0.89	1	0.9	1
9. Over the last week, how much has your skin caused any <b>sexual difficulties</b> ?	0.23	0	0.2	0.2
10. Over the last week, how much of a problem has the <b>treatment</b> for your skin been, for example by making your home messy, or by taking up time?	0.6	1.6	0.73	0.58

**Table 2.** The mean score of individual components of DLQI questionnaire in different groups in the study.

Table 3 shows number of cases and controls responding to individual component of DLQI questionnaire.

Individual components of DLQI questionnaire	Very much (Yes for Question 7)		A lot		A little		Not at all/Not relevant	
	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
1. Over the last week, how <b>itchy, sore, painful</b> or <b>stinging</b> has your skin been?	14 (35)	16 (40)	11 (27.5)	8 (20)	13 (32.5%)	14 (35)	2 (5)	2 (5)
2. Over the last week, how <b>embarrassed</b> or <b>self conscious</b> have you been because of your skin?	2 (5)	6 (15)	18 (45)	9 (22.5)	19 (47.5)	20 (50)	1 (2.5)	5 (12.5)
3. Over the last week, how much has your skin interfered with you going shopping or <b>looking after your home or garden?</b>	0	2 (5)	9 (22.5)	9 (22.5)	22 (55)	16 (40)	9 (55)	13 (32.5)
4. Over the last week, how much has your skin influenced the clothes <b>you wear?</b>	0	3 (7.5)	5 (12.5)	8 (20)	18 (45)	8 (20)	17 (42.5)	21 (52.5)
5. Over the last week, how much has your skin affected any social or leisure <b>activities?</b>	0	2 (5)	10 (25)	9 (22.5)	16 (40)	13 (32.5)	14 (35)	16 (40)
6. Over the last week, how much has your skin made it difficult for	0	0	1 (2.5)	0	4 (10)	5 (12.5)	35 (87.5)	35 (87.5)

you to do any sport?								
7. Over the last week, has your skin prevented you from working or studying? If "No", over the last week how much has your skin been a problem at work or studying?	5 (12.5)	3 (7.5)	0	1 (2.5)	13 (32.5)	7 (17.5)	22 (55)	29 (72.5)
8. Over the last week, how much has your skin created problems with your partner or any of your close friends or relatives?	1 (2.5)	3 (7.5)	6 (15)	7 (17.5)	21 (52.5)	17 (42.5)	12 (30)	13 (32.5)
9. Over the last week, how much has your skin caused any sexual difficulties?	0	0	2 (5)	0	4 (10)	8 (20)	34 (85)	32 (80)
10. Over the last week, how much of a problem has the treatment for your skin been, for example by making your home messy, or by taking up time?	4 (10)	1 (2.5)	2 (5)	6 (15)	13 (32.5)	8 (20)	21 (52.5)	25 (62.5)

**Table 3.** The number of patients responding to individual components of DLQI questionnaire.

*Disease specific DLQI score in HIV-infected patients*

The mean DLQI score of pruritic papular eruption of HIV was  $9.88 \pm 4.14$  while the mean DLQI score for all the other diseases combined was  $7.77 \pm 3.54$ , but it was considered statistically not quite significant ( $p = 0.0897$  by student's unpaired t test).

## Discussion

HIV infection predisposes the patient to a number of skin diseases which have direct impact on the management of such cases besides aggravation of the quality of life impairment that these patients suffer. Zancanaro et al [1] studied 897 HIV-infected patients and found folliculitis to be the commonest dermatological disorder in HIV (161 cases, 18%) followed by condyloma acuminatum (11.5%), seborrheic dermatitis (10.6%) xerosis cutis (9.7%), dermatophyte infections (7.1%) and common warts (6.8%). Shobhana et al [4] found oral candidiasis (36%) to be the commonest dermatological disease in HIV, followed by dermatophytosis and gingivitis (13% each), herpes zoster (6%), herpes simplex and scabies (5% each). In a study by Criton et al [5], dryness of skin (100%) and lustreless hair (100%) were the commonest dermatological involvement in HIV. Jindal et al [6] reported herpes zoster as the most common infectious disease (31.5%) in HIV followed by mucocutaneous candidiasis (26.3%), while the most common noninfectious manifestation was seborrhoeic dermatitis (18.4%) followed by pruritic papular eruptions (7.9%). In the present study, the most common skin disease in HIV cases was pruritic papular eruption of HIV (18/40, 45%) followed by infections (12 cases, 30%) and xerosis (4 cases) which suggests that HIV-infected patients are more prone to develop hypersensitivity reaction to arthropod bite and also infections when compared with a normal population.

Ajithkumar et al [7] studied 10 patients of persistent pruritic eruptions of HIV who had erythematous excoriated papules, predominantly on the exposed parts of the body. All cases showed CD4+ count less than 500 and 8 of them had CD4+ count less than 400. In 2 patients, the pruritic eruptions led to the diagnosis of HIV infection. They suggest that the appearance of pruritic eruptions of the exposed parts of the body in HIV infected patients who are exposed to repeated insect bites can be a marker of fall in CD4+ count and impending immunodeficiency. In our study, 18 patients with pruritic papular eruptions had lesions for an average of 1.92 months. Seventeen patients were on ART. Mean CD4+ count of 448.27 cells/mm<sup>3</sup> with a range of 113 to 1310. However, mean CD4+ count, excluding three upper outliers having CD4+ count of 1310, 972 and 844, was 329.53 cells/c.mm which was below the recommended CD4 count at which ART is to be started indicating that pruritic papular eruptions represent advanced HIV disease. Patients with pruritic papular eruption of HIV had a higher impairment of dermatology life quality compared to all other diseases combined even though statistically it was not quite significant.

Dermatology life quality has been assessed in HIV-infected patients by a few authors. Mirmirani et al used SKINDEX in 76 patients of HIV and showed that for most diagnoses (except warts and onychomycosis), there were no consistent differences in Skindex scores of HIV-infected patients compared with scores of patients not known to be infected with HIV. Patients on HAART for longer duration had significantly lower Skindex scores (improved skin-related quality of life) compared with those on HAART for a shorter duration. They concluded that HAART is associated with improved quality of life with regard to HIV associated skin diseases. [8]

Aftergut et al developed and evaluated the reproducibility, internal consistency, and discriminatory capacity of a quality-of-life questionnaire targeted for HIV (+) patients with skin disease known as HIV-DERMDEX. Using the HIV-DERMDEX, they showed that eosinophilic folliculitis scored considerably worse with respect to itching, overall health, work productivity and nonsexual relationships than those with disseminated molluscum or seborrheic dermatitis since eosinophilic folliculitis was uniquely associated with marked, even debilitating, pruritus. [2]

In our study, we used DLQI questionnaire developed by Finlay et al [3], in 40 HIV-infected patients with dermatoses and their DLQI score was comparable to that of the control group not known to be infected with HIV. When we analyzed those on ART and compared that with those not on ART, we found that the mean DLQI scores in those on ART was lower ( $8.46 \pm 4.01$ ) than that in those not on ART ( $10.6 \pm 2.88$ ). Even though this was not statistically significant, it does indicate that HIV-infected patients on ART have a relatively lower impairment of dermatology life quality and hence a better quality of life.

## Conclusion

The results of our study showed that DLQI score in HIV-infected patients was comparable to that of controls not known to be HIV-infected. ART marginally improved dermatology life quality in HIV-infected patients in our study.

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