Skin Manifestation of Thai HIV Infected Patients in HAART Era

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Background: *Skin and mucocutaneous disease changed its spectrum after Highly Active Antiretroviral Therapy (HAART) had been introduced. Previous publication showed opportunistic infections (OIs) related skin disease was a major presentation in pre-HAART era, whereas non-infected skin disease became emerging in HAART era. There is no report describing skin disease in HAART era among Thai HIV-infected patients.*
Objective: *To describe the prevalence of skin and mucocutaneous disease in Thai HIV-infected patients after using HAART.*
Material and Method: *A cross-sectional retrospective study analyzed skin diseases of 237 HIV-infected patients who were currently on HAART, who attended the out-patient skin clinic at Bamrasnaradura Infectious Diseases Institute between September 1, and October 31, 2010. There were 312 lesions. The skin diseases were diagnosed by dermatologists and grouped into four groups as infectious skin disease, non-infectious inflammatory skin disease, tumor, and miscellaneous group. Percentage was calculated in each of skin disease prevalence.*
Results: *The results showed 155 (65%) were men, and mean (SD) of age was 41 (8.8). Median (IQR) of CD4 count was 330 (178, 527) cell/mm^3. The regimens of HAART in the population were 79% for NNRTI based, 20% for PI based, and 1% for tripled NRTI. The time between initial HAART and date of diagnosis of most patients (52%) was more than three years. Non-infected skin disease (61%) was the most common skin disorder prevalence, followed by infectious disease (31%), tumor (0.96%), miscellaneous (6.09), respectively. The most common skin disease was eczema (21%). Four subjects developed drug eruption, all from Efavirenz. Atypical presentation specifically to HIV patients as chronic hypertrophic erosive herpes genitalis (one of IRIS) was found in four patients (20% of all HSV infectious prevalence).*
Conclusion: *Non-infectious inflammatory skin disease is the most common skin prevalence in HIV-infected patients after receiving HAART. Eczema was the most diagnosed skin disease. There were skin diseases related to immune restoration after using HAART and from HAART itself, but in low prevalence.*

Keywords: *Skin manifestation, HIV infection, HAART era*

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Skin and mucocutaneous diseases are among the first recognized manifestation in HIV infected patients. It could be the earliest sign and reflect the progression of HIV disease. In mid 1990s, prior to Highly Active Antiretroviral Therapy (HAART) had been introduced, most of the skin and mucocutaneous diseases are from opportunistic infections such as oral candidiasis, neoplasm such as Kaposi's sarcoma, and inflammatory disorder which were caused by diminution of patient's immunity such as oral hairy leukoplakia and Pruritic papular eruption[1]. As an effectiveness of HAART, the spectrum of HIV disease had a significant change in epidemiology and clinical manifestation; including skin manifestation. Highly Active Antiretroviral Therapy (HAART) is the combination of antiretroviral drugs, which includes nucleotide reverse transcriptase inhibitor (NRTI), non- nucleotide reverse transcriptase inhibitor (NNRTI), and protease inhibitor (PI). After, this therapy had been used, mortality rate reduced markedly. Patient's immunity was increased significantly. This therapy had been proven to enhance CD4 restoration and suppress viral replication, which in turn decreased in AIDS-defining illness, including Kaposi's sarcoma and esophageal candidiasis.

There has been scarce data of skin manifestation prevalence in Asia after the HAART has been introduced. According to the skin and

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mucocutaneous disease in HIV patients, there are often different and severe in presentation and less responsive to treatment than non-HIV infected patients. Furthermore, the skin diseases can be specific to HIV and its treatment and non-specific, the same as non-HIV patients. Hence, it is important that physicians recognize, differentiate, and diagnose the disease thoroughly. Thus, the objective was to evaluate the prevalence of skin manifestation among HIV infected patients in Thailand after HAART has been used.

Material and Method

The present study was a cross-sectional retrospective study performed in Bamrasnaradura Infectious Diseases Institute, one of the first pioneer institutions and hospitals using HAART in Thailand. The authors analyzed data from medical records of HIV infected patients, both men and women, who came to the outpatient dermatologic clinic of Bamrasnaradura Infectious Diseases Institute between September 1 and October 31, 2010. Based on the World Health Organization (WHO) classification, the Patients would qualify for HAART if they were in stage 4 of the disease (*i.e.*, acquired immunodeficiency syndrome: AIDS). The present study had been approved by the Ethical Committee for Research in Human Subjects from Department of Disease Control number 2/54-459.

The inclusive criteria to recruit the subjects into the present study were the patients had to be at least 18 years old, not pregnant during the time of diagnosis and the skin disease was diagnosed by dermatologists. All included patients must receive HAART for more than three weeks prior to the diagnosis otherwise they would be excluded from the research. The latest CD4 value before the time of diagnosis must be documented in the patient's record. Apart from the above exclusion, the exclusive criteria of the present study were skin or mucocutaneous manifestation caused by trauma or patient's record missing.

Three hundred forty three patients came to the outpatient dermatologic clinic of Bamrasnaradura Infectious Diseases Institute between September 1 and October 31, 2010. Two hundred thirty seven patients were included in the present study and 106 patients were excluded.

The skin manifestation was defined as all of skin, nail, hair, and mucocutaneous diseases. Skin disease diagnosed between September 1 and October 31, 2010 were included in the study. Lesions that were previously diagnosed were excluded. For example, a patient that was diagnosed with psoriasis and came back for follow-up during the time of the study was counted as one lesion in the study. However, if a patient were diagnosed with another one or more skin disease during the study, then each lesion would be counted separately. All the skin manifestations that occurred or were diagnosed before starting HAART were excluded. Thus, 312 lesions were included in this study.

The patient's medical records were reviewed and the data were collected. It included age, gender, skin disorder, and date of diagnostic, which must have been diagnosed by dermatologists. The HAART regimen, the latest CD4 count, which was latest previously reported before the diagnosis of skin manifestation within a year were also recorded.

Skin diseases were separated into four groups, infectious group, non-infectious inflammatory disease group, tumor group, and miscellaneous group. The time between initial antiretroviral therapy as HAART and the date of diagnosis was classified into four groups as, one month or less but more than three weeks, a year or less but more than one month, three years or less but more than a year, and more than three year onwards respectively. As AIDS defining illness in each skin disease, CD4 was grouped into less than 200 cells per cubic millimeter (cells/mm^3) and 200 cells/mm^3 or above. HAART was defined as a combination of at least two antiretroviral drugs. CD4 cell counts were performed by standard flow cytometry but there was no collected data of viral load. Statistical analysis was performed using mean, median, inter-quartile range (IQR), and percentage.

Results

Two hundred thirty seven patients were included in the present study. The characteristic of the subjects are shown in Table1. Eighty-two (34.6%) subjects were female and 155 (65.4%) were male. The minimum age of subjects was 19 years old, and the maximum age was 70 years old. Mean (IQR) was 40.98 (34, 46) years. Minimum and maximum of CD4 count were 1 and 1576 cells/mm^3 respectively. The mean (SD) of CD4 cell counts was 375.98 (265) cells/mm^3, and median (IQR) was 329.5 (178, 527.25) cells/mm^3. Fifty-seven subjects (24.05%) had CD4 less than 200 cells/mm^3, and 180 subjects (75.95%) had CD4 200cells/mm^3 or more. The 237 patients represented 312 lesions due to multiple skin diseases in each patient. There was approximately 1.8 skin lesions in

each patient (Table 2). The time between initial antiretroviral therapy as HAART and the date of diagnosis were categorized separately. Six subjects (2.53%) were in the group of one month or less but more than three weeks, 43 subjects (18.14%) were in the group of a year or less but more than one month, 64 subjects (27%) were in the group of three years or less but more than a year, and 124 subjects (52.32%) were in more than three year. The regimens of HAART in the population were 78.53% for NNRTI based (Nevirapine and Efavirenz), 20.19% for PI based (ritonavir, indinavir, and lopinavir/ritonavir), and 1.28% for tripled NRTI based [zidovudine (AZT), stavudine (d4T), lamivudine (3TC), abacavir (ABC), and tenofovir (TDF)], due to allergic and/or resistance to both NNRTI and PI.

The skin disease diagnosis was separated into four groups, Table 3, infectious, non-infectious inflammatory skin disease, tumor, and miscellaneous. In infectious group was differentiated into viral bacterial fungus and parasite. Of all lesions, 30.77% (96 lesions) were infectious, 62.18% (194 lesions) were non-infectious inflammatory skin disease, 0.96% (3 lesions) were tumor, and 6.09% (19 lesions) were miscellaneous.

In non-infectious inflammatory skin disease group (Table 4), most common diagnosed skin disease was eczema, 65 lesions (35.51% of non-infectious inflammatory skin disease group), included acute, sub-acute, and chronic eczema, Pityriasis alba, nummular eczema, dyshydrosis, contact dermatitis, atopic dermatitis, and wide-spreaded eczema. It was followed by acne, which were 26 lesions (13.40% of non-infectious inflammatory skin disease group). Purpuric papular eruption was the third most diagnosis in this group, which were 22 lesions (11.34% of non-infectious inflammatory skin disease group). Seborrheic dermatitis and Psoriasis were diagnosed in 16 (8.25%) and 15 (7.73%) lesions respectively. Eosinophilic folliculitis was diagnosed in 14 patients. Three lesions had an adverse drug eruption, which were all erythema multiforme.

In the infectious group (Table 4), 49 lesions were viral infection, which was the most common pathogen in this group, 51.04% of all infectious diseases. The most common diagnosis was HSV infection (20 lesions; 40.82% of all viral infected diseases), which included atypical presentation specifically to HIV patients as chronic hypertrophic erosive herpes genitalis (4 lesions, 20% of all HSV infection), and typical HSV infection at oral, genital, and other areas. Common wart was the most common diagnosis (20 lesions; 40.82% of all viral infected diseases) and included both genital wart (13 lesions), related with sexually transmitted disease and HPV infection that occurred in other areas. Twenty-three lesions had a fungal infected disease. Most common was dermatophytosis (11 lesions; 47.83%), followed by candidasis (17.39%), and tinea versicolour (17.39%). Twenty-two lesions (22.92% of all infected disease) had bacterial infection. The most prevalent of bacterial disease was folliculitis (7 lesions; 31.82% of all bacterial infected diseases). Syphilis was the second most common bacterial skin disease with six lesions (27.27% of bacterial disease), which were all secondary syphilis infection. Scabies was the only one parasitic skin disease that was diagnosed in the study (1 lesion, 1.05% of all infected diseases).

Only three diseases were diagnosed in tumor group (show in Table 3). They included soft fibroma, CA tongue, and lymphoma cutis. They only had one subject in each disease (0.3% each).

In the miscellaneous group, there were 11 diseases, which included vitiligo (1.3%), melasma (1.3%), postinflamatory hyperpigmentation (0.6%), postinflammatory hypopigmentation (0.3%), androgenic alopecia (0.6%), generalized pruritus(0.3%), senile purpura (0.3%), callus (0.3%), apthous ulcer (0.3%), oral lichen planus (0.3%), and seborrheic keratosis (0.3%). The most two frequencies were

Table 1. Dermographic data (n = 237)

Characteristic	
Age (year), mean $\pm$ SD	40.98 $\pm$ 8.80
Gender	
Male	155 (65.4%)
Female	82 (34.6%)
CD4 count (cells/mm^3), median (IQR)	329.5 (178, 527.25)
CD4 count < 200 (cells/mm^3)	57 (24.05%)
CD4 count $\geq$ 200 (cells/mm^3)	180 (75.95%)

IQR = inter-quartile range

Table 2. Prevalence of 237 patients developed 312 lesions as shown

Number of lesion	Number of patient	Percentage (%)
1	178	75.10
2	44	18.57
3	14	5.91
4	1	0.42

Table 3. Prevalence of the skin manifestation

Categories	Number of lesion (%) (n = 312)	CD4 < 200 cells/mm^3 (No., %)	CD4 ≥ 200 cell/mm^3 (No., %)
Non-infectious skin disease	194 (62.18)	55, 28.4	139, 71.6
Infection	96 (30.77)	26, 27.4	70, 72.9
Viral	49		
Fungus	24		
Bacterial	22		
Parasite	1		
Tumor	3 (0.96)	0, 0	3, 100
Miscellaneous	19 (6.09)	3, 15.8	16, 84.2

Table 4. Prevalence of the skin disease in HIV-infected patients in HAART era (312 lesions)

Non-infectious inflammatory skin disease (n = 194)			Infectious skin disease (n = 96)		
Disease	No.	Percentage (% of all lesions)	Disease	No.	Percentage (% of all lesions)
Eczema	65	20.83	Viral		
Acne	26	8.30	HPV infection	20	6.41
Pruritic papular eruption	22	7.05	HSV infection	20	6.41
Seborheic dermatitis	16	5.13	Herpes Zoster	7	2.24
Psoriasis	15	4.81	Viral exanthem	2	0.64
Eosinophilic Folliculitis	14	4.49	Fungus		
Alopecia Areata	7	2.24	Dermatophytosis	11	3.53
Xerosis	7	2.24	Candidiasis	7	2.24
Urticaria	4	1.28	Tinea versicolour	4	1.28
Drug eruption*	4	1.28	Molluscum contagiosum	2	0.64
Photosensitivity	4	1.28	Bacteria		
Prurigo nodularis	3	0.96	Folliculitis	7	2.24
Telogen effluvium	3	0.96	Syphilis	6	1.92
Acneiform Eruption	1	0.32	Green nail	3	0.96
Vasculitis	1	0.32	Ecthyma	1	0.32
Seafood allergy	1	0.32	Leprosy	1	0.32
Exfoliative dermatitis*	1	0.32	Cellulitis	1	0.32
			Furuncle	1	0.32
			Abscess	1	0.32
			Granuloma	1	0.32
			Parasite		
			Scabies	1	0.32

* Consequence from using antiretroviral drug as Efavirenz, NNRTI group

vitiligo and melasma (4 subjects), followed by post-inflamatory hyperpigmentation (2 subjects), androgenic alopecia (2 subjects), and other diagnosis found in only one subject each.

Discussion

HAART has changed the natural course of HIV infection. It restored the immunity of HIV-infected patients by decreasing viral loads and increasing CD4 level. The present study was to survey the spectrum and frequency of skin diseases in patients treated with HAART.

A previous study showed that most of the skin manifestation in HIV infected patient prior to the introduction of HAART was opportunistic infection such as oral candidasis and oral hairy leukoplakia[1,2,4].

After the HAART era, the prevalence of skin disease had been changed. Comparing with the previous studies, all showed that the spectrum of skin diseases had changed from infection to non-infectious skin diseases, both from an improvement of immunity itself and side effect from antiretroviral drug such as photosensitivity, xerosis, and drug eruption. The previous study of Hengge Ulrich R et al had shown that most of the skin diseases were non-infectious and were xerosis (28.2%), pruritus (25.5%). In the study of Spira R, it was also shown that the most common diseases in HAART era were Xerosis (9.8%), followed by seborrheic dermatitis (9.1%). Likewise, in the present study, the result showed that mostly non-infectious inflammatory skin diseases were diagnosed. However, the highest prevalence of skin diseases was eczema (20.83%). Xerosis and seborrheic dermatitis was found in seven (2.2%) and 16 (5.1%) lesions respectively. In contrast to the study from an American report, Zancanaro P et al reported that folliculitis had the highest prevalence (15.49%)[1,4,5]. The data shows that one patient could develop more than one skin disease during the time of data collection, two months. Therefore, in our study, there were 237 patients with 312 skin lesions, approximately 1.8 lesions in each patient.

Eczema included non-specific dermatitis, all stages of eczema, nummular eczema and pityriasis alba, contact dermatitis, atopic dermatitis, dyshydrosis. Thirty-four lesions (73.91%) were diagnosed as eczema in patients with a CD4 count of more than 200 cells/mm^3. Because HAART improved HIV-infected patient's immunity, the skin immunity also had developed immunity to various skin infectious diseases. Eczema could be a sequel or complication from infection or xerosis, which cause severe itching. Moreover, the antiretroviral drug, especially Protease inhibitor, had retinoid-like effects, pruritus and skin dryness as a side-effect[1,9]. Therefore, the prevalence of eczema was higher than previous studies, and there were only seven patients diagnosed as xerosis and one patient as generalized pruritus.

Acne had the second highest prevalence in the present study, which was 8.3%. The 19 subjects (73.08%) had CD4 of more than 200 cells/mm^3. It was different from the previous study, which was 3.8%[5]. However, in the study of Osei-Sekyere B, Karstaedt A, which focused on immune reconstitution syndrome, they found that 10.17% of all prevalence was acne. The number was similar to the present finding. Immune reconstitution inflammatory syndrome (IRIS) was the term used for the paradoxical clinical deterioration that occurred among HIV-infected patients after receiving HAART. Acne was described as a part of immune reconstitution disease. Reconstitution of an immune response against *Propionibacterium acnes* had been suggested as a mechanism[6].

Pruritic papular eruption (PPE) was a common skin disease among HIV infected patients before HAART era. Sivayathorn A. et al reported 32.7% of skin disorder was PPE. In contrast to the present study, it showed 22 lesions (7.1%) of all population in the present study diagnosed as PPE. This might be explained by improvement of patients' immunity after receiving HAART because PPE is a skin manifestation in advanced HIV infection[7]. Fifteen lesions (68.18%), which were PPE developing after HAART initiation, occurred when CD4 > 200 cells/mm^3. This may be explained because most of patients in the present study had CD4 count of more than 200 cells/mm^3 (73.1%), higher than other studies[6,7].

Herpes simplex virus (HSV) infection was common in subjects infected with HIV, but the prevalence was reduced after using HAART. The study of Zancanaro P et al showed that HSV infection's prevalence had dropped after using HAART from 5.26% to 2.80%. After analyzing the data, of the 20 patients (6.4%) with HSV infection, half of them had genital herpes (10 lesions) that was associated with sexual transmitted disease. Four patients (20%) had chronic hypertrophic erosive HSV infection, which is recognized as one of the immune restoration disease. It was a presenting feature of genital HSV infection in HIV infected patient after receiving HAART.

HPV infection was as common as HSV infection in the present study with 20 patients (6.4%), which 70% had CD4 more than 200 cells/mm^3. Thirteen lesions of HPV infection were genital wart. The prevalence was lower as compared to the previous studies, 10.4 to 11.5%[5,7]. Refactory condyloma acuminata and verrucae valgaris improved after initiation of HAART in some patients. This might be the reason why there were less HPV infection in all subjects.

Sixteen lesions (5.1%) were diagnosed as seborrheic dermatitis. More than 50% of the cases had CD4 > 200 cells/mm^3 (62.5%). Seborrheic dermatitis had been described as a common skin disease affecting HIV-infected patients. While 85% of patients are diagnosed during their lifetime, the prevalence declined after introduction of HAART. There is some

controversy because some studies did not see the decline. It showed to be the most common IRIS condition after introduction of HAART for a month[6]. Prevalence in the present study was not as high. This might be explained by the difference in demographic distribution, including race and longer period of using HAART before diagnosis. The etiology of seborrheic dermatitis was understood, but there was an association with lipophilic yeast *Malassesia furfur* (formerly *Pityrosporum ovale*) infection. The clinical presentation was typical in most cases but some cases were similar to psoriasis, which was difficult to differentiate both clinical and histological.

The present study showed less prevalence of psoriasis than seborrheic dermatitis by only one lesion. Eighty percent of patients who developed psoriasis had CD4 over 200cells/mm^3. Goh B et al found that 80% of their psoriasis developed the disease around the time of or after HIV infection, suggesting that HIV infection or immunosuppression influenced its pathogenesis. The pathogenesis of psoriasis in HIV-infected disease was not fully understood, but immunodysregulation certainly play a role. Immune reconstitution showed having a significant clinical improvement of three patients with recalcitrant psoriasis after embarking upon antiretroviral therapy in Goh B et al study. After initiation of HAART, immunity of HIV-infected patients increased, caused psoriasis' improvement.

Karposi's sarcoma was a well recognized vascular tumor particularly in HIV-infected patients, especially in men having sex with men, which was a risk factor of human herpes virus-8 infection. In western studies, there were a larger group of men having sex with men than in Asian, according to the study of Goh B et al. This difference might explain the low Kaposi's sarcoma in the present study. Moreover, Kaposi's sarcoma had been reported to have reduced prevalence among HAART users[5,7].

The spectrum of skin diseases in the present study was different from others in several aspects. Infectious skin diseases were less frequent and there was no prevalence of the Kaposi's sarcoma, which was the skin tumor specifically associated with HIV infection. The reasons for the differences could be degree of immunosuppression and genetic difference. Furthermore, the prevalence of skin disorder might not represent the actual prevalence in general HIV clinic, since the data were recorded only from the patients who attended out-patient skin clinic. Patients with skin and mucocutaneous disorder that were easily diagnosed and treated such as mild degree of severity might not have been referred, and may have been treated by internal medicine in the HIV clinic. Therefore, conditions such as folliculitis, puritic papula eruption, oral candidasis, and mild form of drug eruption, resolved on drug discontinuance might be under represented in the present study. Moreover, the present study focused on HIV-infected patients who came to the out-patient clinic only. There was no collected data from the in-patient group. Therefore, prevalence of severe drug eruption, such as steven-johnson syndrome (SJS) or toxic epidermal necrolysis (TEN) had been missing.

Since it was a retrospective study, some of the information may be missing and incomplete. The limitation in the present study included varying of diagnosis in this study, no recorded mode of HIV transmission, the small number of subjects in each diagnosis, clinical diagnosis that was made, which was not accurate as histological diagnosis, and there could be a bias due to spotted time of data collection. Therefore, the authors could not find an association between each diagnosis and CD4 as well as the period of using HAART.

Conclusion

Nowadays, highly active antiretroviral therapy has been used as a standard therapy for HIV-infected patients. It affected the natural course of the disease, including the skin and mucocutaneous feature, as well as its prevalence. Non-infectious inflammatory skin disease is the most common skin prevalence in HIV-infected patients after receiving the HAART. Skin diseases caused by opportunistic infection declined after starting HAART. The prevalence of skin diseases showed both associated and non-associated with HIV-infection. The same occurred in non-HIV infected patients. Eczema was the most diagnosed skin disease. There were skin diseases specifically related to immune restoration after using HAART and from antiretroviral drug itself such as chronic hypertrophic erosive herpes genitalis, drug eruption xerosis, and photosensitivity. However, it had a low prevalence. As a result, knowing the spectrum and prevalence of skin diseases after introducing HAART is another tool for accurate diagnosis that leads to an efficient treatment of HIV-infected patients.

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Conflict of interest

None.

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โรคทางระบบผิวหนังของผู้ป่วยที่ติดเชื้อเอชไอวี หลังได้รับยาต้านไวรัสในประเทศไทย

แพรวพรรณ บุณยรัตพันธุ์, พรชัย จิระชนากุล, วิศิษฏ์ ประสิทธิศิริกุล

ภูมิหลัง: *หลังจากที่เริ่มมีการรักษาโรคเอชไอวีด้วยยาต้านไวรัสแบบ Highly Active Antiretroviral Therapy (HAART) โรคทางระบบผิวหนังได้มีการเปลี่ยนแปลงความชุกของโรคจากโรคผิวหนังที่เกิดจากการติดเชื้อโรคฉวยโอกาสมาเป็นโรคผิวหนังที่ไม่ได้เกิดจากการติดเชื้อมากขึ้น ซึ่งเป็นผลจากภูมิคุ้มกันของผู้ป่วยติดเชื้อเอชไอวีดีขึ้น และจำนวนเชื้อเอชไอวีลดลงอย่างมากหลังจากได้รับยาต้านไวรัส*

วัตถุประสงค์: *เพื่อหาจำนวนความชุกของลักษณะโรค และความถี่ของโรคผิวหนังในผู้ป่วยเอชไอวีหลังได้รับยาต้านไวรัส*

วัสดุและวิธีการ: *การศึกษานี้เป็นการศึกษาเชิงพรรณนาย้อนหลัง โดยศึกษาผู้ป่วย 237 คนที่ติดเชื้อเอชไอวี และได้รับยาต้านไวรัสมานานกว่า 3 สัปดาห์ ที่มารับการตรวจรักษาในคลินิกโรคผิวหนัง แผนกผู้ป่วยนอกของสถาบันบำราศนราดูร ในช่วงวันที่ 1 กันยายน พ.ศ. 2553 ถึง 31 ตุลาคม พ.ศ. 2553 ซึ่งในผู้ป่วย 237 คน และได้รับการตรวจวินิจฉัยจากแพทย์เฉพาะทางโรคผิวหนังเท่านั้น โดยได้แบ่งกลุ่มโรคทางระบบผิวหนังออกเป็น 4 กลุ่ม คือ โรคที่เกิดจากการติดเชื้อ โรคผิวหนังอักเสบที่ไม่ได้เกิดจาการติดเชื้อ โรคในกลุ่มเนื้องอก และโรคอื่น ๆ และนำจำนวนอุบัติการณ์ที่เกิดโรคมาคำนวณเป็นเปอร์เซ็นต์*

ผลการศึกษา: *การศึกษานี้พบผู้ป่วยส่วนใหญ่เป็นผู้ชาย (65%) ค่าเฉลี่ยและค่ากลางของค่าซีดีสี่คือ 376 และ 330 เซลล์ต่อลูกบาศก์มิลลิเมตร ตามลำดับ กลุ่มยาต้านที่ใช้รักษาแบ่งออกเป็น 3 กลุ่ม ได้แก่ ใช้ยา NNRTI (79%) เป็นยาพื้นฐาน, ใช้ยา PI (20%) เป็นยาพื้นฐาน และใช้ยาต้านชนิด NRTI (1%) ชนิดเดียว พบผู้ป่วยที่เกิดอุบัติการณ์ของโรคในกลุ่มโรคผิวหนังอักเสบที่ไม่ได้เกิดจากการติดเชื้อ 61% และกลุ่มโรคที่เกิดจาการติดเชื้อ 31% โดยชนิดของโรคที่พบมากที่สุดคือ โรคผิวหนังอักเสบ eczema (21%) ส่วนโรคสิว (8%) และโรค pruritic papular eruption (7%) พบรองลงมาตามลำดับ พบผู้ป่วย 4 รายเกิดอุบัติการณ์แพ้ยาจากยาต้านชนิด Efavirenz และพบผู้ป่วย 4 ราย ที่เกิดโรคติดเชื้อไวรัส herpes บริเวณอวัยวะเพศชนิดหนาตัว ซึ่งเป็นโรคที่มีความเฉพาะกับโรคที่เกิดขึ้นในผู้ป่วยติดเชื้อเอชไอวีหลังได้รับยาต้านไวรัส (IRIS)*

สรุป: *จากการศึกษาพบอุบัติการณ์ของกลุ่มโรคผิวหนังอักเสบที่ไม่ได้เกิดจากการติดเชื้อ ในกลุ่มผู้ป่วยเอชไอวีหลังได้รับยาต้านไวรัสมากเป็นอันดับแรก และอุบัติการณ์ของโรคผิวหนังที่เกิดจากเชื้อฉวยโอกาสลดลง เมื่อเทียบกับการศึกษาก่อนที่ผู้ป่วยจะได้รับยาต้านไวรัส โรคที่พบมากที่สุดคือ โรคผิวหนังอักเสบ eczema*