PROFILE OF CUTANEOUS DISEASES AMONG HIV PATIENTS OF WESTERN ODISHA

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ABSTRACT

BACKGROUND

Very few studies exist on the clinical and epidemiological profile of cutaneous diseases among patients of HIV infection in western Odisha.

MATERIALS AND METHODS

The present study was conducted to study the clinical spectrum of cutaneous manifestations among patients with HIV infection and to study their correlation with CD4 cell count. It was a hospital based prospective study where a total of 200 HIV seropositive patients with dermatological manifestation were enrolled.

RESULTS

Out of the 200 patients, 138 patients were males and 62 females. Occupation wise 24.5% were labourers, 18.5% housewives, 14% farmer and 11% were drivers. 11% had bacterial infection with furunculosis being most common seen in 10 patients (5%), out which 2 patients had CD4 count <200 cells/cumm. Fungal infection was seen in 81 patients with Tinea unguium being the most common seen in 23 patients. Only 5% patients had viral infection and verruca vulgaris was seen in 1.5% of them. Seborrhoeic dermatitis was seen in 35 patients (17.5%), out of them majority (29 patients) had CD4 count <500 cells/cumm, followed by prurigo simplex in 25 patients (12.5%), ichthyosis in 10 patients (5%), xerosis in 7 patients (3.5%), pruritic papular eruption and oral lichen planus were seen in 6 patients (3%) each.

CONCLUSION

A low CD4 count was associated with increased incidence of xerosis, seborrheic dermatitis, pruritic papular eruption, adverse drug eruptions when compared with high CD4 count.

KEYWORDS

HIV infection, cutaneous manifestation, CD4 count.

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BACKGROUND

AIDS, the acquired immunodeficiency syndrome is a fatal illness caused by a retrovirus known as the human immunodeficiency virus (HIV) which breaks down the body's immune system, leaving the victim vulnerable to a host of life threatening opportunistic infections. Skin diseases cause significant morbidity and may be initial signs of immunosuppression. They affect between 80 and 95% of HIV-infected patients,[1] occurring at any time in the course of infection. Skin is often the first and only organ affected during most of the course of HIV disease.[2] Cutaneous disorders in the setting of HIV infection represent a vast spectrum of diseases. As immunity deteriorates, variable presentations, opportunistic infections, mixed infections and potential drug reactions are increasing likely.

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Clinical courses of many skin diseases may be altered in concomitant HIV infection, especially when there is deterioration or improvement in immune status. In general, skin conditions in HIV infection can occur in unusual settings, can be unusually severe, can have bizarre clinical appearance, can run recurrent course, can be part of systemic opportunistic infections and can have abnormal response to conventional treatment.[3]

Recognition and management of skin diseases in HIV/AIDS patients are important in several aspects. In some patients, skin findings may be the earliest sign of HIV presentation and can thus alert one to an early HIV diagnosis and care. In more advanced diseases with systemic opportunistic infections, cutaneous manifestations may facilitate correct diagnosis and specific treatment. In general, skin complications tend to linger on in HIV-infected patients.[3] This adds to the psychosocial impact of HIV disease.

Even though HIV has been reported in India since a long time, very few studies exist which have evaluated the presence of cutaneous diseases among HIV affected persons. The number of such studies is still rarer in our part of the country.

Western part of Odisha is undergoing a rapid phase of industrialization which has significantly increased the

number of migrant population and slum dwellers. Increase in daily wages, overcrowding and urbanisation has started taking a toll on the sexual health of people. There has been an increasing trend in the total number of HIV positive cases and other sexually transmitted diseases. Awareness of the presence of cutaneous diseases among HIV positive patients and their correlation with disease progression would go a long way in helping the treating physician in managing the disease in a more scientific way.

Aim

The present study was conducted with an aim to study the clinical and epidemiological spectrum cutaneous diseases among patients having HIV infection reporting to a tertiary care hospital in a tribal region in Odisha, India.

MATERIALS AND METHODS

The present study was undertaken in the Department of Dermatology where all diagnosed cases of HIV infection by rapid test method detecting antibodies to HIV 1 and HIV 2 were enrolled. It was a hospital based prospective study. In all cases a detailed history was taken which included age, sex, occupation, socioeconomic status, educational qualification, duration of disease, history of medications (past & present). Cases were included in different socio economic groups as per the modified B G Prasad socio-economic status scale.[4] All cases enrolled into the study were thoroughly examined for general conditions as well as for the presence of cutaneous morbidities. The examination included height, weight, general systemic examination and examination for the presence of cutaneous diseases.

Laboratory Investigations Included

- CD4 counts (flow cytometry)
- Biopsy in clinically doubtful cases
- Routine haemogram including differential count, total leucocyte count, ESR, blood sugar, chest X-ray were done in all cases.
- For confirmation of bacterial infection pus, aspirate or discharge was subjected to Gram staining, followed by culture wherever necessary.
- The diagnosis of superficial fungal infection was done by KOH scraping using 10% KOH solution. Culture was done in doubtful cases only.
- Diagnosis of viral infection was done clinically only. ELISA for IgG & IgM for herpes simplex virus 1 & 2 was done in doubtful cases.
- Diagnosis of scabies was confirmed by scraping of the lesions followed by demonstration of mite under microscope.

The HIV status of all the patients was verified and the CD4+ T cell count was obtained. The Association between CD4+T lymphocyte cell count and cutaneous manifestations of HIV/AIDS was also noted. Data thus collected were documented and statistically analysed to arrive at a conclusion.

RESULTS

A total of 200 HIV seropositive patients were found to have dermatological manifestations of the disease. Out of the 200 patients, 138 patients were males and 62 females. There were a total of 54 types of dermatological manifestations.

Age Group	Total	Male	Female	Percentage
0-9	10	4	6	5
10-19	3	1	2	1.5
20-29	47	31	16	23.5
30-39	79	52	27	39.5
40-49	47	37	10	23.5
50-59	14	13	1	7
60 & above	0	0	0	0
Total	**200**	**138**	**62**	**100**

Table 1. Distribution of Cases as per Age and Sex

Occupation	Male	Female	Total	Percentage
Business	13	0	13	6.5
Dependant	4	0	4	2
Driver	22	0	22	11
Farmer	28	0	28	14
Housewives	0	37	37	18.5
Labourer	36	13	49	24.5
Service	7	2	9	4.5
Shopkeeper	16	0	16	8
Student	5	7	12	6
Other	7	3	10	5
Total	**138**	**62**	**200**	**100**

Table 2. Distribution of Cases According to Occupation

As seen in the table 2, 24.5% were labourers, 18.5% housewives, 14% farmer, 11% driver, 8% shopkeeper, 6.5% businessman, 6% student, 5% other and 2% were dependant.

Locality	Male	Female	Total	Percentage
Rural	77	40	117	58.5
Urban	61	22	83	41.5
Total	**138**	**62**	**200**	**100**

Table 3. Distribution of Cases According to Geographical Area

There were 58.5% patients belonging to rural population and 41.5% belonged to urban population.

Educational Status	Male	Female	Total	Percentage
Illiterate	16	18	34	17
Primary	38	18	56	28
Secondary & higher secondary	79	25	104	52
Graduate	5	1	6	3
Post-graduate & above	0	0	0	0
Total	**138**	**62**	**200**	**100**

Table 4. Distribution of Cases as per Educational Status

Majority of patients belonged to secondary & higher secondary educational standard.

Socio-economic Status	Male	Female	Total	Percentage
Lower	86	34	120	60
Lower middle	40	22	62	31
Middle	8	2	10	5
Upper middle	4	4	8	4
High	0	0	0	0
Total	**138**	**62**	**200**	**100**

Table 5. Distribution of Cases as per Socio-Economic Status[4]

Majority of patients (60%) belonged to a low socioeconomic status and 31% belonged to lower middle group.

Infections	CD4 Count (cells/cumm)				Total	% age
	<200	200-500	>500	N.A.		
BB leprosy with Type-1 reaction	1	0	0	-	1	0.5
BT leprosy with Type-1 reaction	1	1	0	-	2	1
Carbuncle	0	1	0	-	1	0.5
Folliculitis	0	2	1	-	3	1.5
Furunculosis	2	4	3	1	10	5
Impetigo	1	1	0	-	2	1
Paronychia (pyogenic)	0	1	0	-	1	0.5
Syphilitic chancre	0	1	0	-	1	0.5
Trichomycosis axillaris	1	0	0	-	1	0.5
Total	**6**	**11**	**4**	**1**	**22**	**11**

Table 6. Distribution of Cases According to Types of Bacterial Skin Infections and CD4 Count (N= 200)

There were a total of 22 patients with bacterial infection. It constituted 11% of the total mucocutaneous disorders associated with HIV. Furunculosis was the most common bacterial infection seen in 10 patients (5%), out of which 2 patients had CD4 count < 200 cells/cumm and 4 patients had CD4 counts 200-500 cells/cumm. This was followed by folliculitis in 3 patients (1.5%), impetigo in 2 patients (1%), BT with type-1 reaction in 2 patients (1%), BB with type-1 reaction (0.5%), carbuncle (0.5%), paronychia (0.5%), syphilitic chancre (0.5%), trichomycosis axillaris (0.5%).

Fungal Infections	CD4 Count (cells/cumm)				Total	Percentage
	<200	200-500	>500	N.A.		
Monilial balanoposthitis	2	1	0	-	3	1.5
Oral candidiasis	7	7	0	-	14	7
Pityriasis versicolor	2	0	2	-	4	2
Tinea cruris	10	7	0	-	17	8.5
Tinea corporis	11	3	1	-	15	7.5
Tinea pedis	0	2	1	1	4	2
Tinea manuum	0	1	0	-	1	0.5
Tinea unguium	8	8	5	2	23	11.5
Total	**40**	**29**	**9**	**3**	**81**	**40.5**

Table 7. Distribution of Cases according to Types of Fungal Skin Infections and CD4 Count (N=200)

Fungal infections were seen in 81 patients. It accounts to 40.5% of the total skin disorders. Tinea unguium was the most common, seen in 23 patients (11.5%), with 8 patients had CD4 count <200 cells/cumm and 8 patients had CD4 count 200-500

cells/cumm. There were 17 patients (8.5%) with tinea cruris, 15 patients (7.5%) with tinea corporis, 14 patients with oral candidiasis, 4 patient (2%) each with pityriasis versicolor, tinea pedis and monilial balanoposthitis in 3 patients (1.5%) and tinea manuum in 1 patient (0.5%).

Viral Infections	CD4 Count (cells/cumm)			Total	Percentage
	<200	200-500	>500		
Herpes genitalis	2	0	0	2	1
Herpes zoster	2	0	0	2	1
Molluscum contagiosum	2	0	0	2	1
Oral hairy leukoplakia	1	0	0	1	0.5
Verruca vulgaris	3	0	0	3	1.5
Total	**10**	**0**	**0**	**10**	**5**

Table 8. Distribution of Cases According to Types of Viral Skin Infections and CD4 Count (N=200)

There were 10 patients (5%) with viral infections. Most common among them was verruca vulgaris, seen in 3 patients (1.5%), all of them had CD 4 count < 200 cells/cumm. This was followed by 2 patients (1 %) each with Herpes genitalis, Herpes zoster, Molluscum contagiosum and 1patient (0.5%) with oral hairy leukoplakia. All patients had CD4 count < 200 cells/cumm. Scabies was seen in 20 patients (10%), out of which 9 patients had CD4 count < 200 cells/cumm.

Skin Disorders	CD4 Count (cells/cumm)				Total	Percentage
	<200	200-500	>500	N.A.		
Eosinophilic folliculitis	1	0	0	-	1	0.5
Hyperpigmentation of nail	0	1	0	-	1	0.5
Ichthyosis	3	6	0	1	10	5
Oral lichen planus	5	1	0	-	6	3
Prurigo simplex	8	13	4	-	25	12.5
Pruritic papular eruption	1	4	0	1	6	3
Seborrheic dermatitis	13	16	4	2	35	17.5
Stevens-Johnson syndrome	2	0	0	-	2	2
Xerosis	2	3	2	-	7	3.5

Table 9. Distribution of Non-infectious Skin Disorders and CD4 Count (N=200)

Seborrheic dermatitis was seen in 35 patients (17.5%), out of them majority of patients had CD4 count < 500 cells/cumm, followed by prurigo simplex in 25 patients (12.5%), ichthyosis in 10 patients (5%), longitudinal melanonychia in 8 patients (4%), xerosis in 7 patients (3.5%), pruritic popular eruption and oral lichen planus were seen in 6 patients (3%) each, seborrhoea capitis and discoid dermatitis in 5 patients (2.5%) each, acneiform eruption and lichen simplex chronicus were seen in 3 patients (1.5%) each. Stevens-Johnson syndrome, prurigo nodularis, pityriasis alba, atrophic glossitis were observed in 2 patients (1%) each.

DISCUSSION

Among the 200 patients, 138 patients were males and 62 patients were females. Out of this majority (52) of males belonged to the age group of 30-39 yrs. The youngest patient in the study was of 5 years old and the highest age noted was 57 years. The male preponderance in the study is explained by the fact that there is greater involvement of male patients in "high-risk" activities predisposing to HIV infection. The probable male to female ratio could be that most female patients belong to the low socio-economic strata, have low literacy levels and may not seek medical attention as early as males.

Majority of the patients (24.5%) were unskilled labourers, which included daily wage workers. This is because, the hospital renders free service and hence is attended more by people belonging to middle and low income group.

Among women, majority (37) patients were housewives. This again emphasizes the main route and source of infection in females i.e. through heterosexual contact with their spouse.

Bacterial infections were seen in 22 patients that constitute 11% of the total manifestations. Furunculosis was the most common presentation accounting for 5% and Staphylococcus being the most common organism. The prevalence in Indian studies was 2.9% by Kumarasamy et al.[5]

This was followed by folliculitis in 1.5%, impetigo in 1%, carbuncle in 0.5%, paronychia in 0.5%, also borderline tuberculoid, mid borderline leprosy, syphilitic chancre, trichomycosis axillaris were observed. This low incidence of bacterial infection could be attributed to the indigenous use of antibiotics.

In a Korean study (T-G Kim et al) eosinophilic pustular folliculitis was seen in 18.6% HIV patients.[6] In another study

conducted by Zancanaro PC et al in Brazil, folliculitis was the most common cutaneous disorder identified.[7] In a study conducted by Supanaranond W et al at the Pramongkutklao Hospital, folliculitis was observed in 4.7%-5.6% of patients which is similar to our observation.[8] Majority of patients belonged to CD4 count < 500 cells/cumm. This study showed 3% patients had CD4 count <200 cells/cumm, 5.5% had 200-500 cells/cumm, and 2% had CD4 count Fungal infections were seen in 81 patients. It accounts to 40.5% of the total skin disorders. Candidiasis (oral and genital) was present in 17(8.5%) patients. Majority (53%) were having CD4 count below 200 cells/cumm. Oral candidiasis was seen in 7%, and 1.5% had candidal balanoposthitis. Depending on the disease stage of study population incidence of Candidiasis range from 16.7% to 45%. In patients at high risk for AIDS, the presence of unexplained oral candidiasis predicts the development of serious Opportunistic Infections.

Tinea unguium was the most common, seen in 23 patients (11.5%), with 8 patients had CD4 count <200 cells/cumm and 8 patients had CD4 count 200-500 cells/cumm. There were 17 patients (8.5%) with tinea cruris, 15 patients (7.5%) with tinea corporis, 4 patients (2%) each with pityriasis versicolor and tinea pedis. Tinea manuum was observed in 1 patient (0.5%). The disease was extensive when present, involving large surface areas.

Various studies from India and abroad have found an increase in the overall incidence of dermatophytosis. In the study conducted by Atadokpede F et al dermatophytosis was observed in 10.5% patients.[9] Onychomycosis (9.7% to 44.16%) and dermatophytosis (8% to 10.5%) was observed in various studies.[9,10,11]

In this study dermatophytic infections was seen in 60 patients (30%), majority 48% were having CD4 count <200 cells/cumm which is similar to others.

There were 10 patients (5%) with viral infections. The commonest was verruca vulgaris that constituted 30% of viral infections. This was followed by 2 patients (1 %) each with Herpes genitalis, Herpes zoster, Molluscum contagiosum. One patient (0.5%) with oral hairy leukoplakia. All patients had CD4 count < 200 cells/cumm.

A study conducted in south India by Kumarasamy et al herpes genitalis was observed in 7.7% of patients and multidermatomal herpes zoster in 11.2% patients.[5]

In the study conducted by Atadokpede F et al shingles was observed in (11.6%) of HIV positive patients, Supanaranond W reported herpes zoster in (10.9% and 5.6%), in the prospective and retrospective study respectively.[8,9]

In this study herpes genitalis was seen in (20%), and herpes zoster was seen in (20%) of total viral infection in HIV seropositive patients.

Seborrheic dermatitis was present in 17.5% of patients in the present study. In various studies, its occurrence varies from 4.7% to 74.16%.[8,10] This is comparable to the incidence in the Korean study as reported by Kim TG et al and Jing W et al in which they found an incidence of 17.1% and 20.7% respectively.[6,11]

Sud et al from Shimla reported 31.33% patients had seborrheic dermatitis observed among the most common mucocutaneous manifestations.[12] The commonest variety is generalized, followed by seborrhoea capitis. 42% percent of patient had CD4 count <200 cells/cumm. 61% of patients had CD4 count 200-500 cells/cumm.

Nnoruka et al observed that seborrheic dermatitis occurred most significantly with CD4 cell counts of 201–500 cells/mm^3 (43.1% vs. 12% P <0.01) relative to those with lower CD4+ counts (51–200 cells/mm^3).[13]

In our study seborrheic dermatitis occurred most significantly with CD4 cell counts of 200–500 cells/mm^3 (61% vs. 42%) relative to those with lower CD4+ counts (<200 cells/mm^3) which is similar to study done by Nnoruka et al.[13]

Xerosis was seen in 7 patients (3.5%) in this study. Prevalence of Xerosis in various Indian studies ranged from 22.67% to 52.5%.[12,10]

In an Indian study xerosis (50%) was the commonest skin manifestation.[14]

Ichthyosis was seen in 10 patients (5%) in our study. Ichthyosis has been reported in 22.67% of cases by Sud N et al.[12]

In the present study xerosis was often more generalized whereas acquired ichthyosis was seen most commonly over lower extremities. Ichthyosis and Xerosis may be the result of long standing illness, malnutrition, poor hygiene or immunological deficits. In our study 31% patients had CD4 count <200 cells/cumm and 56% patients had CD4 count 200-500/cumm.

Papular pruritic eruptions were seen in 6 patients (3%), out of which (20%) had CD4 counts <200 cells/cumm and (80%) had CD4 count 200-500 cells/cumm. In various Indian studies pruritic papular eruption varies from 7.7% to 22.5%.[5,10] Supanaranond W observed in the retrospective and prospective study that incidence of pruritic papular eruptions was 51.2% and 50% respectively.[8]

Eosinophilic folliculitis was seen in 1 patient (0.5%) in the present study. The CD4 count was <200 cells/cumm.

Two (1%) patients presented with Stevens-Johnson syndrome had CD4 count <200 cells/cumm Papular eruptions, facial hyperpigmentation, longitudinal melanonychia, hyperpigmentation of nail were observed. The incidence of adverse drug reaction is high in HIV patients. Also, generally, utility of drugs is more in HIV due to various illnesses. drug eruption was seen in 1 patient. Acneiform eruption was seen in 3(1.5%) patients. Lichenoid eruption was seen in 1 patient.

Hair changes were seen in 1 patient (0.5%), which included diffuse alopecia. Chronic, diffuse hair loss in HIV infected patients has been attributed to chronic HIV-1 infection itself and recurrent secondary infections, nutritional deficiencies, immunologic and endocrine dysregulation and exposure to multiple drugs.

Nail changes were seen in 10 patients (5%). Bluish discolouration of nails was observed in 1 patient (0.5%), longitudinal melanonychia in 8(4%) patients, pitting of nail was seen in 1 patient (0.5%). Diffuse pigmentation involving

the whole nail was observed. Onychomycosis (tinea unguium) was seen in 23 patients (11.5%). Paronychia was seen in 1 patient. Increased pigmentation is commonly seen in HIV infected persons.

Oral Candidiasis was most common oral manifestation and was seen in 14 patients (7%). Oral lichen planus was observed in 6 (3%) patients. Angular cheilitis, oral hairy leukoplakia and fissured tongue was observed in 1 patient (0.5%) each. Angular cheilitis which may be due HIV infection, candidiasis or nutritional cause. Oral hairy leukoplakia was reported varies from no patients to 10%.[8]

The cutaneous manifestations in HIV seropositive patients in relation to CD4 counts proved that a low CD4 count was associated with increased incidence of xerosis, seborrheic dermatitis, pruritic papular eruption, adverse drug eruptions when compared with high CD4 count. It was observed that patients with CD4 counts < 200 cells/mm^3 had more infectious conditions than those patients with CD4 counts >200 cells/mm^3. Patients with CD4 counts less than 200 cells/microlitre were found to have more incidence of infectious conditions like genital herpes, herpes zoster, viral warts, molluscum contagiosum, scabies etc.

CONCLUSION

The present study reinforces the fact that skin is the most common organ affected in HIV infected persons and mucocutaneous manifestations are one of the most important clinical prognostic markers and may even lead to a diagnosis of HIV infection.

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