



CUTANEOUS MANIFESTATIONS IN HIV INFECTION: A CLINICOPATHOLOGICAL STUDY

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Article Received on 07/12/2016

Article Revised on 27/12/2016

Article Accepted on 17/01/2017

ABSTRACT

The first case of Acquired Immunodeficiency Syndrome (AIDS) was reported in Africa. But today India is considered as a new hotbed for this disease. AIDS is caused by a retrovirus human immunodeficiency virus (HIV). Two types of HIV exist: HIV-1 and HIV-2. HIV-1 is more virulent, easily transmitted and is the cause of the majority of HIV infections. On the other hand HIV-2 is less virulent and less transmittable.^[1] Skin is commonly affected in the course of HIV infection and in many cases skin findings may be the earliest sign of HIV infection. Some are pathognomonic of HIV infection and their presence in a healthy individual mandates HIV investigations. A wide array of dermatological manifestations comprising of bacterial, fungal, viral, and several non-infectious disorders may be evident in HIV infected patient. Most cutaneous complications appear and worsen as disease progresses. The introduction of antiretroviral therapies has declined cutaneous lesions but the severity and spectrum is still present. Our Aim is to study the patterns of Skin lesions in HIV and to correlate this with CD4+ T cell counts. Seropositive HIV patients, patients of all ages and both sexes were included in the study. Seronegative HIV patients were taken as controls. Skin Lesions were sampled by punch biopsy fixed in 10% formalin, processing done and confirmed by histopathology. Skin scrapings were performed in some cases. Total number of HIV positive patients – 188. There were 122 males and 66 females with male: female ratio of 1.8: 1. Number of HIV patients with skin Lesions – 62 (32.98%). There were 48 males and 18 females with M: F ratio of 2.6: 1. Number of patients who underwent biopsy – 52 (83.87%). Number of Non HIV patients with skin lesions – 1832. We classified cutaneous manifestations into two groups: Infectious and Noninfectious. 51 cases (82.26%) belong to infectious group and remaining 11 cases (17.74%) belong to noninfectious group. Viral infections were the most common lesion encountered in our study in the infectious group. Psoriasis and Contact Dermatitis were common in noninfectious group. Infectious diseases are more common in HIV patients whereas noninfectious diseases were common in Non HIV patients. Molluscum contagiosum is the commonest infectious disease encountered in our study. Genital diseases are also common in HIV and genital Herpes is the commonest genital disease observed in present study. Recognition of cutaneous diseases in HIV helps in early diagnosis and proper management of HIV as well as a measure of the immune status of individual.

KEYWORDS: AIDS, HIV, Skin Lesions, Infectious disorders, Noninfectious disorders.

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) is caused by a retrovirus human immunodeficiency virus (HIV). Two types of HIV exist: HIV-1 and HIV-2. HIV-1 is more virulent, easily transmitted and is the cause of the majority of HIV infections. On the other hand HIV-2 is less virulent and less transmittable.^[1]

HIV continues to be a major global public health issue. Since 2000, 38.1 million people have become infected with HIV and 25.3 million people have died of AIDS-related illnesses. In 2014, an estimated 36.9 million people were living with HIV (including 2.6 million children) – a global HIV prevalence of 0.8%. The vast

majority of this number live in low- and middle- income countries. In the same year, 1.2 million people died of AIDS-related illnesses.^{[2],[3]} As of March 2015, 15 million people living with HIV were receiving antiretroviral treatment (including 823,000 children) - representing 41% of those in need. 13.5 million of these people were in low- and middle- income countries.^[4] As per the NACO guidelines, the number of people who live with HIV/AIDS in India are 2.31 million.^[6]

The HIV infection is associated with several dermatological conditions which may be the first pointer towards the existence of HIV.^[7] Some are

pathognomonic of HIV infection and their presence in a healthy individual mandates HIV investigations.

A wide spectrum of dermatological manifestations comprising of bacterial, fungal, viral and several non-infectious disorders may be evident in HIV infected patient. Their frequency patterns and the associated factors have been shown to vary from region to region.^[8] Most cutaneous manifestations appear and worsen as disease progresses. Not only these manifestations help in diagnosis but also predict the severity and progress of the disease and can be correlated with CD4+ counts.^[5]

Sometimes the diagnosis of skin diseases in HIV pose a difficult situation as to whether it's a primary lesion or secondary changes and even in primary disease it will have variable presentation. The aim of present study is to study the patterns of skin lesions in HIV and to correlate these skin lesions with CD4+ T cell counts.

MATERIALS AND METHODS

Seropositive HIV cases were included in the study. The study was conducted at a tertiary care centre (Osmania General Hospital, Hyderabad, India) for a period of one year. Patients of all ages and both sexes were included. Only those patients who suffer from dermatological manifestations after contracting HIV infection were included. Seronegative skin cases were taken as controls. Each patient was evaluated for clinical and dermatological examination. A detailed history comprising of patient details as well as his dermatological complaints, duration of these complaints, primary skin lesion, associated symptoms and clinical diagnosis were taken. Seropositive patients with clinically diagnosed skin lesions were evaluated further with skin biopsy.

A 4mm disposable skin punch was used to take the biopsy of these lesions. The biopsy sample obtained was immediately put in 10% formalin for fixation. Routine processing was done and the slides were stained with Hematoxylin and Eosin stain. Gram staining was done for suspected bacterial infection cases and toluidine blue stain for suspected fungal infection cases. In these skin scrapings were done instead of punch biopsy. Histopathological confirmation was done for all these cases and results were compiled accordingly.

RESULTS

Total number of HIV positive patients was 188 out of which there were 122 males and 66 females with male: female ratio of 1.8: 1. Number of HIV patients with skin Lesions – 62 (32.98%). There were 48 males and 18 females with M: F ratio of 2.6: 1. Number of patients who underwent biopsy – 52 (83.87%). Number of Non HIV patients with skin lesions – 1832. Cutaneous manifestations were divided into two groups: Infectious and Noninfectious. 51 cases (82.26%) belong to infectious group and remaining 11 cases (17.74%) belong to noninfectious group [Table 1]. Viral infections were the most common lesion encountered in our study in the infectious group. Psoriasis and Contact Dermatitis were common in noninfectious group. Infectious diseases are more common in HIV patients whereas noninfectious diseases were common in Non HIV patients. Molluscum contagiosum was the commonest lesion encountered in our study. The patterns of skin lesions in both HIV seropositive and HIV seronegative patients which we observed in our study are shown in [Table 2], [table 3] and [Table 4].

Table 1: Percentage of Infectious and Noninfectious Skin Lesions in HIV seropositive and HIV Seronegative patients.

Skin Lesions	HIV Positive	Percentage	HIV Negative	Percentage
Total number of cases	62	100	1832	100
Infectious	51	82.26	778	42.46
Non-Infectious	11	17.74	1054	1054

Table 2: Patterns of Skin Lesions in HIV Seropositive and HIV Seronegative cases.

Skin Lesions	HIV Positive	Percentage	HIV Negative	Percentage
Infectious	51	82.26	778	42.46
Viral	29	46.77	107	5.85
Bacterial	06	9.66	125	6.81
Fungal	16	25.80	244	13.31
Arthropod	Nil	00	302	16.48
Non Infectious	11	17.74	1054	57.54

Table 3: Patterns of Skin Lesions (Infectious) in HIV Seropositive and HIV Seronegative cases.

Skin Lesions	HIV Positive	Percentage	HIV Negative	Percentage
Viral	29	46.77	107	5.85
Molluscum contagiosum	12	19.2	28	1.6
Plane warts	04	6.4	36	1.9
Verruca vulgaris	02	3.2	05	0.25

Genital herpes	06	9.6	10	0.5
Herpes zoster	03	4.8	28	1.6
Nonspecific viral inflammation	02	3.2	Nil	00
Bacterial	06	9.66	125	6.81
Superficial folliculitis	05	8.05	87	4.73
Hansens	01	1.61	38	2.08
Fungal	16	25.80	244	13.31
Tinea cruris	06	9.68	184	10.2
Tinea capitis	02	3.23	48	2.5
Tinea at multiple sites	08	12.89	12	0.6

Table 4: Patterns of Skin Lesions (Non Infectious) in HIV Seropositive and HIV Seronegative cases.

Skin Lesions	HIV Positive	Percentage	HIV Negative	Percentage
Non Infectious	11	17.74	1054	57.54
Psoriasis	03	4.83	128	6.92
Pyogenic granuloma	02	3.23	15	0.83
Pyoderma	02	3.23	08	0.47
Eosinophilic folliculitis	01	1.62	53	2.86
Contact Irritant dermatitis	03	4.83	264	14.26
Acne vulgaris	Nil	---	205	11.07
Others	Nil	---	381	20.57

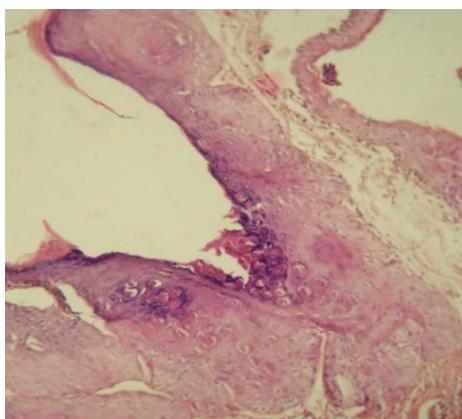
DISCUSSION

VIRAL INFECTIONS

In the present study, out of 118 HIV seropositive patients 62 were having skin lesions which accounts to 32.98%. In a study conducted by Billy M et al, the percentage was 44.55% which is also quite high. This high percentage could be due to 1. Increasing HIV seropositivity globally. 2. They include both cutaneous and mucous lesions and 3. Regional variation. Our study includes only cutaneous lesions.^[9] In a study conducted by Josephine M et al in the year 2006, 68.8% of their cases were having skin lesions. This study also shows the increasing prevalence of HIV cases with skin lesions.^[10] In the present study there is male preponderance with male to female ratio of 1.8:1 where as other workers showed slight female preponderance.^{[11][13][14]} as well as slight male preponderance.^[12] Major route of

transmission of infection is heterosexual which correlates well with other studies.^[12]

Infectious lesions (82.26%) were more common than non-infectious. In infectious group viral lesions (46.77%) were more common and Molluscum contagiosum (19.2%) was the most common lesion encountered in our study Fig1. In a study conducted by Kirstin Altman et al, Molluscum was the commonest lesion observed in their study which is similar to our study.^[18] In a study conducted by Wieland et al found higher incidence of polyoma-associated virus infections and trichodysplasia spinulosa-associated polyomavirus. Though these viral infections are asymptomatic but in immunosuppressed individuals they may cause serious disease.^[15] Multiple viral infections are also common in HIV patients. Long term follow up is necessary to determine the significance of these viral skin lesions.



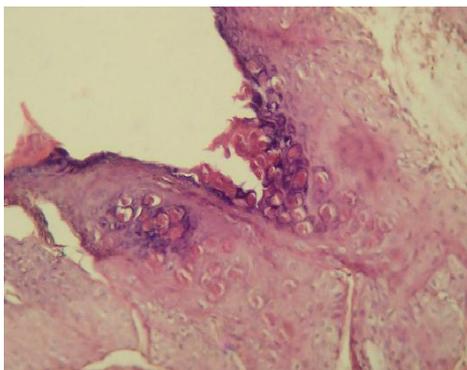


Fig 1: Viral Infections. Molluscum Contagiosum

BACTERIAL INFECTIONS

In our study 6 cases (9.66%) of HIV patients were positive for bacterial infections. Out of this 5 were positive for staphylococcus **fig 2** and one for hansen's. In a study conducted by Befus MB et al, 47% of the HIV

positive patients were colonized with staphylococcus aureus bacteria. This high prevalence may be due to; their study is based on oropharynx and anterior nares whereas our study is only on cutaneous lesions.^[16]

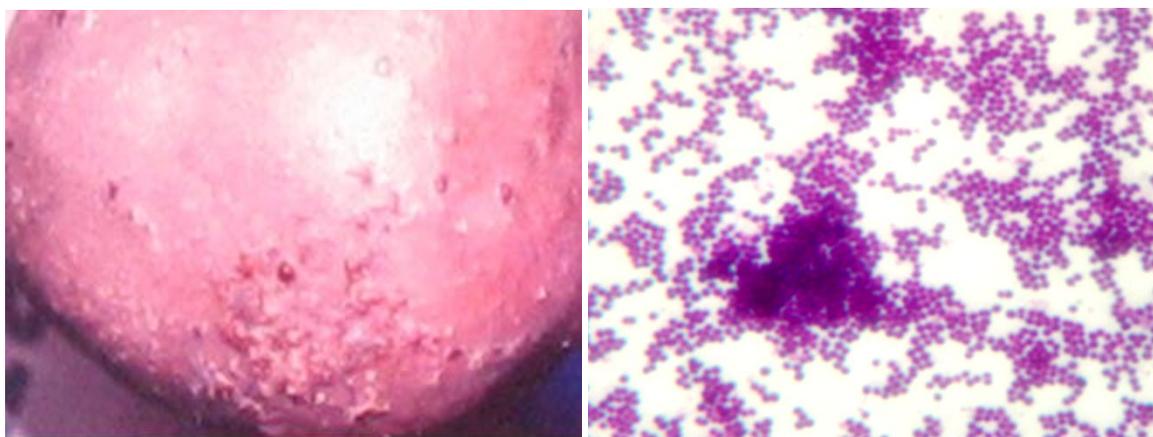


Fig 2: Bacterial Infections. Staphylococcus aureus

FUNGAL INFECTIONS

In our study 16 cases were positive for fungal infections (25.80%). In a study conducted by Akinboro AO et al oral candidiasis was the commonest lesion observed in their study. In our study viral infections were most common and we didn't take oral lesions in our study.^[17]

NON INFECTIOUS SKIN LESIONS

We received 11 cases (17.74%) with noninfectious lesions. Psoriasis was the most common lesion in HIV patients observed in our study. Other non-infectious lesions seen were pyogenic granuloma, pyoderma, eosinophilic folliculitis and dermatitis. All the above lesions are seen in Non HIV individuals.

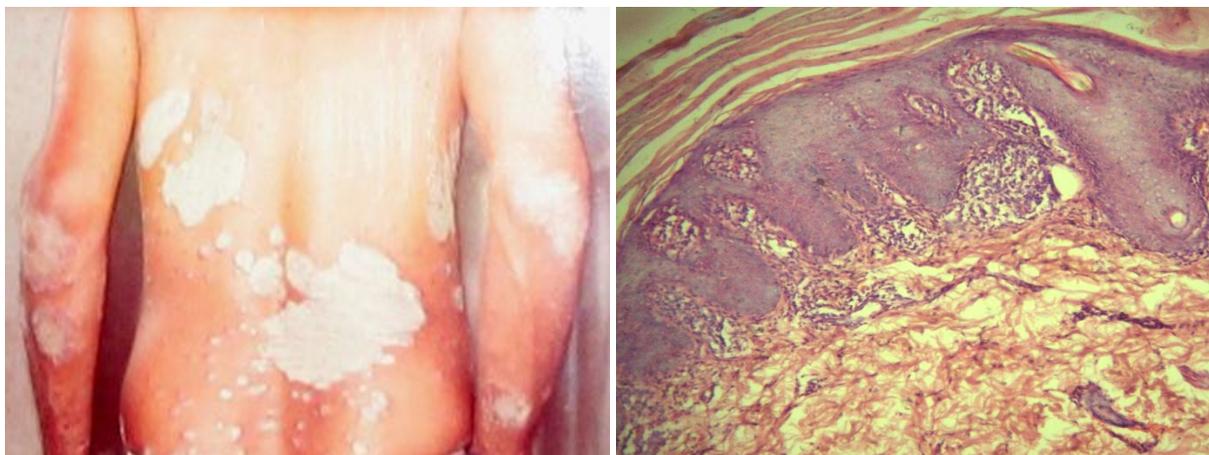


Fig 3: Psoriasis Gross and Microscopy.

also but the difference is in the severity of the disease and poor response of these patients to treatment. In a study conducted by Jeong YS et al, they observed that HIV associated psoriatic patients respond poor to treatment and the severity of disease is much more compared to Non HIV patients same like our study.^[19] In a study conducted by Sud N et al for mucocutaneous manifestations in HIV infected Indian patients, they observed 22% of their patients infected with pyoderma which is quite high compared to our study.^[20] We received 3 cases (4.83%) of psoriasis. Papillary silver white scales were observed over chest, lower abdomen, back and extensor surfaces of upper and lower limbs. Duration of these lesions were of 2 years and they poorly respond to treatment. In a study conducted by Yeon Sang Jeong et al for psoriatic patient's severity of disease and management they observed that 60% of the body surface area was affected with psoriatic lesions like erythematous silver white scales which is similar to our study. One more thing which they observed in their study was the difficulty in treatment for the moderate to severe HIV associated psoriatic patients as the first line of treatment with ultraviolet B phototherapy was ineffective in these patients.^[21]

CONCLUSION

Skin manifestations are very common in HIV infected patients and they can be diagnosed easily. The only problem is their severity and difficulty in treatment if diagnosed lately or the immune status of individual is very much decreased. Early diagnosis is very important for early and effective treatment. Some skin diseases are pathognomonic of retroviral disease and presence of these diseases in a healthy individual mandates HIV testing. Most skin diseases are easy to diagnose by inspection and histopathological examination, in that way skin lesions become an important tool in the diagnosis of HIV infection.

REFERENCES

1. Reeves JD, Doms RW (2002). "Human immunodeficiency virus type 2". *The Journal of general virology*, 83(Pt 6): 1253–65.
2. UNAIDS (2015) 'Fact sheet: 2014 statistics'.
3. UNAIDS (2015) 'How AIDS Changed Everything'.
4. World Health Organisation (WHO) (2015) 'HIV/AIDS'.
5. Biju Vasudevan, Amitabh Sagar, Ashish Bahal, AP Mohanty, VSM. Cutaneous manifestations of HIV—a detailed study of morphological variants, markers of advanced disease, and the changing spectrum. *Med J Armed Forces India*. 2012 Jan; 68(1): 20–27.
6. <http://www.unaids.org/en/CountryResponses/india.asp> Source: Epidemiological Fact Sheet on HIV and AIDS, 2008. Assessed on 31-07-2009.
7. Shobhana A, Guha SK, Neogi DK. Mucocutaneous manifestations of HIV infection. *Indian J. Dermatol Venereol Leprol*. 2004; 70(2): 82–86.
8. Mbuagbaw J, Eyong I, Alemnji G, Mpoudi N, Same-Ekobo EA. Pattern of skin manifestations and their relationships with CD4 counts among HIV/AIDS patients in Cameroon. *Int J. of Dermatol*. 2006; 45(3): 280–84.
9. Billy M, Ross D, Amanda Whitworth, James The burden of mucocutaneous conditions and the association with HIV-I infection in a rural community in Uganda. *Tropical Medicine & International Health*. 1999; 4(5): 349–54.
10. Josephine M, Issac E, George A, Ngole M, Albert SE. Patterns of skin manifestations and their relationships with CD4 counts among HIV/AIDS patients in Cameroon. *Int J Dermatol*. 2006 Mar; 45(3): 280-4.
11. Shashi Chopra and Usha Arora. Skin and Mucocutaneous Manifestations: Useful Clinical Predictors of HIV/AIDS. *J Clin Diagn Res*. 2012 Dec; 6(10): 1695–1698.
12. Sen S, Halder S, Mandal S, Pal PP, Halder A, Bhaumik P. Clinico- epidemiological profile of cutaneous manifestations among human immunodeficiency virus positive patients in the Sub Himalayan region. *Indian J. of Dermatol, Venerol, Leprol*. 2009; 75(4): 403–05.
13. Salami T. A. T., Adewuyi G. M., Echekwube P., Affusim C. Pattern of cutaneous pathology among a cohort of HIV/AIDS patients accessing care in a rural/suburban adult ART clinic in Nigeria. *The British Journal of Medicine & Medical Research*. 2013; 3: 1199–1207.
14. Glynn J. R., Caraël M., Auvvert B., Kahindo M., Chege J., Musonda R., Kaona F., Buvé A. Why do young women have a much higher prevalence of HIV than young men? A study in Kisumu, Kenya and Ndola, Zambia. *AIDS*. 2001; 15(4): S51–S60.
15. Wieland U, Silling S, Hellmich M, Potthoff A, Pfister H, Kreuter A. Human polyomaviruses 6, 7, 9, 10 and Trichodysplasia spinulosa-associated polyomavirus in HIV-infected men. *J Gen Virol*. 2014; 95(Pt 4): 928–32.
16. Befus MB, Miko BA, Herzig CT, Keleekai N, Mukherjee DV, Larson E, Lowy FD. HIV and colonization with *Staphylococcus aureus* in two maximum-security prisons in New York State. *J Infect*. 2016 Dec; 73(6): 568-577. doi: 10.1016/j.jinf.2016.08.016. Epub 2016 Sep 1.
17. Akinboro AO, Onayemi O, Mejiuni AD. Frequency, pattern and extent of skin diseases in relation to CD4+ cell count among adults with human immunodeficiency virus infection or acquired immunodeficiency syndrome in Osogbo, southwestern Nigeria. *Int J Dermatol*. 2014 Apr; 53(4): 416-24.
18. Kirstin Altman, Erin Vanness and Ryan P. Westergaard. Cutaneous Manifestations of Human Immunodeficiency Virus: a Clinical Update. *Curr Infect Dis Rep*. 2015 Mar; 17(3): 464.
19. Jeong YS, Kim MS, Shin JH, Cho JK, Lee HI, Kim HJ, Choi JP. A Case of Severe HIV-Associated Psoriasis Successfully Treated with Acitretin Therapy. *Infect Chemother*. 2014 Jun; 46(2): 115-9.

20. Sud N, Shanker V, Sharma A, Sharma NL, Gupta M. Mucocutaneous manifestations in 150 HIV-infected Indian patients and their relationship with CD4 lymphocyte counts. *Int J STD AIDS*. 2009 Nov; 20(11): 771-4.
21. Yeon Sang Jeong, Min Sung Kim, Jin Ho Shin, Jin Kyung Cho, Hyang Im Lee, Hyun, Jung Kim and Jae-Phil Choi. A Case of Severe HIV-Associated Psoriasis Successfully Treated with Acitretin Therapy. *Infect Chemother*. 2014 Jun; 46(2): 115-119.