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PATTERN OF SKIN DISORDERS AND THEIR RELATIONSHIP WITH CD 4 T CELL COUNT IN HIV-INFECTED CHILDREN

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HOW TO CITE THIS ARTICLE:

Prerna Sharma, Krishnendra Varma, Meetesh Agarwal. "Pattern of Skin Disorders and their Relationship with CD 4 T Cell Count in HIV-Infected Children". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 40, May 18; Page: 6974-6980, DOI: 10.14260/jemds/2015/1013

ABSTRACT: CONTEXT (BACKGROUND): Skin disorders are common in human immunodeficiency virus infected children. Clinical manifestations can thus facilitate in identifying patient's immune status. The prevalence and pattern of skin disorders in HIV-infected children was determined to understand the relationship between CD4 T cell count and various skin disorders. **AIMS:** To study the skin manifestations and their relationship with CD4 T cell counts among HIV/AIDS patients of pediatric age group. **SETTINGS:** Department of Dermatology, Venereology, Leprology, Ujjain. **DESIGN:** Observational Study, **METHODS AND MATERIAL:** A total of 156 HIV-positive/AIDS cases were studied over a period of twelve months i. e., February 2013 to January 2014. A detailed history covering all relevant points was recorded in all cases. Each patient underwent a thorough general, physical, systemic, dermatological and venereological examination. 13 out of 156 cases were in the age group of 3 months to 15 years and were identified with different forms of skin disorders. All relevant investigations were done. The results were compiled and data analyzed. **STATISTICAL ANALYSIS USED:** Data analysis was done using Statistical Package for Social Sciences (SPSS) v. 21 for windows and Chi-square test was used. **RESULTS:** Out of these 13 cases, 8(61.5%) were males and 5 (38.4%) were females. Maximum number of children were within the age group of 12-15 years. Mother to child transmission (84.6%) was the most frequent mode of transmission in these children. The most common skin manifestations in the study patients were papular pruritic eruptions, scabies, papular urticaria, oral and vulval candidiasis. Few less common ones were herpes zoster, scrofuloderma, verruca vulgaris, aphthous stomatitis, pitriasis alba, seborrheic dermatitis and furunculosis. Long eyelashes was present among the hair manifestations. The mean CD4 T cell count was 464.04cells/cumm. **CONCLUSIONS:** Prevalence of skin disorder is common in HIV-infected children with pruritic papular eruption, scabies, papular urticaria and candidiasis were the commonest manifestations, which significantly correlates with degree of immune suppression. **KEYWORDS:** CD4 Lymphocyte Count Child HIV Infections.

INTRODUCTION: HIV, the virus that causes AIDS, "acquired immunodeficiency syndrome" has become one of the world's most serious health and development challenges. HIV in India has now been there over three decades. By this time, India now has the dubious distinction of being the country with second highest number of people living with HIV/AIDS. Pediatric HIV is a major world health problem, which is progressing at an alarming rate.^[1]

As per UNAIDS around 5.7 million people in India are affected with AIDS.^[1] Globally, there were 3.2 million children living with HIV in 2013, 240,000 new infections among children, and 190,000 AIDS deaths. The estimated number of children living with HIV/AIDS in India is 202,000 as per UNAIDS. However half of these children die undiagnosed before their 2nd birthday.^[1]

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The predominant mode of transmission of HIV in children is vertical i. e., it is acquired through intrauterine, intrapartum or through breast feeding from an HIV infected mother. Other routes such as sexual transmission and blood transfusion are not as common.^[2] Since children have a biologically weaker immune system they are more prone to faster disease progression and most of the children become symptomatic within 1-2 years of acquisition of HIV infection and majority if untreated die by 76- 90 months of age.^[3] Children with HIV infection differ from HIV infected adult patients. Children usually have higher viral load, weaker immune system, variable latency period, fewer opportunistic infections, fewer medicines approved for the management, different spectrum of clinical manifestations, diagnostic differences, and patterns of disease progression.^[4]

Mucocutaneous manifestations are more frequent in HIV/AIDS – infected children than in the normal population.^[5] With the increased availability of equipment to perform CD4 counts and the knowledge that CD4 cells were the primary target of HIV, the determination of CD4 count became the standard measure of immunodeficiency in HIV-infected patients.

The present study is done to know the spectrum of skin disorders in HIV infected children and also attempts to correlate with the CD4 count.

MATERIALS & METHODS: The present study was cross-sectional study carried out in the Out Patient Department of Dermatology, Venereology and Leprology in a tertiary care hospital. One hundred fifty six HIV seropositivity cases having mucocutaneous manifestations were enrolled. 13 patients were within the age group of 3 months to 15 years. A detailed history of each of these cases was taken. An attempt was made to know the possible mode of transmission of HIV infection. A thorough clinical examination, which included the general examination followed by a detailed dermatological evaluation, was done and findings were recorded. The clinical diagnosis was supplemented with relevant laboratory investigations such as 10% KOH mount, gram staining, tzanck smear, skin biopsy in selected cases etc. Patients were treated symptomatically. Specific treatment was given according to the diagnosis. Cases were asked to come for follow-up every week initially, and monthly after clinical cure.

Data analysis was done using Statistical Package for Social Sciences (SPSS) v. 21 for windows. For comparison of frequencies and percentages Pearson Chi-square test was used. P value <0. 05 was considered statistically significant.

RESULTS: Out of the 13 patients of pediatric age group, 8 were males and 5 females. Male to female ratio was 1.6:1. Maximum numbers (46.1%) were in the age group of 12-15 years. [Table 1] 53.8% patients were from a rural background and the rest (46.1%) from urban. [Table 2] Vertical route of transmission was most common followed by blood transfusion route. [Table 3] Similar to it, 11 patients had a positive family history to HIV positivity. [Table 4] 46.1% patients had their CD4 T cell counts >500 cells/cumm. [Table 5] The dermatological disorders seen in the study group were broadly classified into two groups; that is infectious and non-infectious groups. 9 out of these were infectious in nature with a mean CD4 T cell count of 564.37 cells/cumm. The rest 7 belonged to the non-infectious group with a mean CD4 T cell count of 363.71 cells/cumm. [Table 6] The infectious disorders were further sub divided based on their etiology into viral, fungal, bacterial and parasitic disease. Parasitic infections were most common, followed equally by bacterial, viral and fungal. [Table 7] Among the bacterial infections, scrofuloderma [Figure 1] and furunculosis [Figure 2] were present. Viral infections included herpes zoster [Figure3] and verruca vulgaris. Among the fungal

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infections, oral and vulval candidiasis [Figure 4] were present and scabies [Figure 5] was present in the parasitic infections. Most common non-infectious disorders were pruritic papular eruption and papular urticaria followed by pityriasis alba, aphthous stomatitis and seborrheic dermatitis [Figure 6] equally. [Table 8] Long eyelashes [Figure 7] was the hair manifestation that was seen in 1 patient.

DISCUSSION: In the present study, males comprised of 61.5% and females comprised 38.4% of the total number of children. Male: female ratio is 1.6:1 which was same as that seen in Shah et. al. study.^[6] Also, maximum numbers (46.1%) of patients were seen in the age group of 12-15 years with the mean age of 9.98 years. This was quite a higher range as compared to Okechukwu et. al.^[7] with 61.3% children with less than 3 years of age. These variations were probably because of the delay in attending the HIV clinics due to lack of education. Maximum patients were from a rural background. This causes lack of awareness about the safe sexual practices among their parents, making them more prone to develop HIV infection. Vertical route of transmission was most frequent mode of transmission (84.6%). This was consistent with 69.9% in Okechukwu et. al.^[7] as maximum children acquires infection from the infected mother.

The next common route of transmission was blood transfusion. 84.6% patients had a positive family history denoting that children acquire infection from their parents. 56.2% cases were of infectious diseases, out of which scabies was most common (33.3%) followed by 1 case each of oral and vulval candidiasis with mean CD4 count of 751 cells/cumm among fungal infections. 1 case of scrofuloderma with mean CD4 count of 463 cells/cumm and 1 of furunculosis with mean CD4 count of 302 cells/cumm among bacterial infections were also present. 1 case each of herpes zoster and verruca vulgaris were also seen among the viral infections with a mean CD4 count of 456 cells/cumm and 671 cells/cumm. Non-infectious diseases constitute the rest of the manifestations (43.7%) with Pruritic papular eruption and papular urticaria being the most common (28.5%) with a mean CD4 count of 440.5 cells/cumm and 390 cells/cumm respectively. Pruritic papular eruption was also the most common non-infectious disorder in Okechukwu et. al. study.^[7] This was followed by 1 case each of pityriasis alba, aphthous stomatitis and seborrheic dermatitis with mean CD4 count of 463 cells/cumm, 671 cells/cumm and 130 cells/cumm respectively. Hair manifestation included long eyelashes in 1 patient with a CD4 count of 130 cells/cumm.

Prevalence of skin disorder is common in HIV-infected children in this environment with pruritic papular eruption, scabies, papular urticaria and candidiasis being the commonest manifestations, which significantly correlates with degree of immune suppression.

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Fig. 1: A case of scrofuloderma in an 11 year old child with CD4 count of 463 cells/cumm

Fig. 2: A case of furunculosis with a CD4 count of 302 cells/cumm

Fig. 3: Herpes zoster in a child with CD4 count of 446 cells/cumm

Fig. 4: Vulval candidiasis in a 4 month old child

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Fig. 5: Infected scabies in a child with CD4 count of 214 cells/cumm

Fig. 6: Seborrheic dermatitis in an 11 year old child with CD4 count of 130 cells/cumm

Fig. 7: Long eyelashes in an HIV-positive child with CD4 count of 130 cells/cumm

Age (years)	Male (%)	Female (%)	Total (%)
4m - 18m	0	2	2
19m - 3yrs	0	0	0
4yrs - 7yrs	0	0	0
8yrs - 11yrs	4	1	5
12yrs - 15 yrs	4	2	6
Total	8	5	13

Table1: Age Wise Sex Distribution

Place of residence	No.	Percentage
Rural	7	53.8%
Urban	6	46.1%
Total	13	100

Table 2: Distribution According to Place of Residence

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Mode of transmission	No. of children	Percentage (%)
Vertical	11	84.6
Blood Transfusion	2	15.3
Total	13	100

Table 3: Mode of Transmission

Other family member	No. of children	Percentage (%)
HIV Positive	11	84.6
HIV Negative	2	15.3
Total	13	100

Table 4: Status of Other Family Members

Cd4 counts (cells/cumm)	No. of patients	Percentage (%)
<200	2	15.3
201-500	4	30.7
>500	6	46.1
NA	1	0
Total	13	100

Table 5: Distribution of Cd4 Counts

Dermatological diseases	No.	Mean cd4 counts (cells/cumm)
Infectious	9	564.37
Non-infectious	7	363.71

Table 6 : Grouping of Dermatological Diseases

Infectious diseases	No.	Mean cd4 counts (cells/cumm)
Bacterial	2	382.5
Viral	2	558.5
Fungal	2	751
Parasitic	3	627.33

Table 7: Distribution According to the Infectious Disease

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Non-infectious diseases	No.	Mean cd4 count
Pruritic papular eruption	2	440.5
Papular urticaria	2	390
Pitriasis alba	1	463
Aphthous stomatitis	1	671
Seborrheic dermatitis	1	130

Table 8: Distribution According to Non-Infectious Diseases

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FINANCIAL OR OTHER

COMPETING INTERESTS: None

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Date of Submission: 19/03/2015.
Date of Peer Review: 20/03/2015.
Date of Acceptance: 09/05/2015.
Date of Publishing: 16/05/2015.