CORRELATION BETWEEN ORAL MANIFESTATIONS AND CD4+ COUNT OF HIV+VE PATIENTS

Nikunj Mathur¹.

1. Senior Lecturer, Department of Oral Medicine and Radiology, Mahatma Gandhi Dental College & Hospital, Jaipur.

CORRESPONDING AUTHOR

Dr Nikunj Mathur,
D-712, Park Avenue Road,
Malviya Nagar, Jaipur.
Email- drnikunjmathur@gmail.com

HOW TO CITE THIS ARTICLE:

Nikunj Mathur. "Correlation between Oral Manifestations and CD4+ count of HIV+ve patients". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 24, June 17; Page: 4419-4424.

ABSTRACT: INTRODUCTION: this study is conducted with objectives to assess the clinical characteristics of HIV +ve patients and to find the correlation between oral manifestations and CD4+ count of HIV +ve patients. **METHODS:** Observational Prospective study. **STUDY DESIGN:** The present study was conducted on 51 patients diagnosed HIV positive or AIDS coming to ART centre(drug naïve) and Department of Dermatology and STD of SMS Hospital, Jaipur between January 2010 to October 2010. The study type was purely observational, purposive and prospective. **RESULTS:** strong correlation in particular lesions and CD4 count. **CONCLUSION:** To conclude Oral manifestation act as harbinger for development of AIDS thus implicating the need of careful oral examination of AIDS patients.

INTRODUCTION: AIDS has emerged as a global crisis since its discovery in the summer of 1981 in the United States.

The human immunodeficiency virus was isolated and identified as the etiological agents of AIDS in 1983. Since then tremendous advances have been taken place in the understanding of its epidemiology, etiology, immunology, pathogenesis and clinical features.

The oral mucous membrane is a unique tissue that is designed to protect the host and is in direct continuation with the skin. The oral cavity occupies a unique position in the human body with respect to its development, structure, flora, functions and diseases.

Histologically the oral mucosa consists of stratified squamous epithelium, connective tissue stroma known as lamina propria and submucosa in all areas except for the gingiva and hard palate. The diseases of oral mucosa may be a part of general systemic disease, a component of cutaneous disease or limited to the oral cavity itself.

HIV and AIDS not only effects each and every system of the body but involve oral cavity in a significant number of people living with HIV & AIDS (PLWHA). It is with the advancement of the disease that the CD4 cells reduces down and when the count is less than 250 along with some opportunistic infections the condition is called as AIDS.

ORIGINAL ARTICLE

The common oral manifestations of HIV/AIDS as has been described in the literature are Oral Hairy Leukoplakia, Oral Candidiasis, Herpetic Stomatitis, Herpes zoster, tuberculosis and other infections.

In the present study an attempt has been made to assess the oral manifestations of HIV/AIDS and also evaluate whether there is any co-relation of oral manifestations with CD4 counts.

WHO DEFINITION: WHO clinical case definition for AIDS is "the existence of at least two major signs with at least one minor sign in the absence of known cause of immune-suppression.

The presence of Kaposi's sarcoma or cryptococcal meningitis itself is sufficient for diagnosis of AIDS.

CDC DEFINITION: AIDS was defined by Centres for Disease Control (CDC) in 1992 as "The presence of reliably diagnosed disease that signals an underlying immune deficiency e.g. Pneumocystis carinii pneumonia, Kaposi sarcoma, where immunodeficiency is not due to other known causes of immune suppression such as iatrogenic immunosuppression or malignant neoplasm."

CDC CLASSIFICATION SYSTEM FOR HIV INFECTION: The current CDC classification system for HIV-infected adolescents and adults categorizes persons on the basis of clinical conditions associated with HIV infection and CD4+ T lymphocyte counts. The system is based on three ranges of CD4+ T lymphocyte counts and three clinical categories and is represented by a matrix of nine mutually exclusive categories. Using this system, any HIV-infected individual with a CD4+ T cell count of <200/L has AIDS by definition, regardless of the presence of symptoms or opportunistic diseases.

MATERIAL AND METHOD: The present study was conducted on 51 patients diagnosed HIV positive or AIDS coming to ART centre and Department of Dermatology and STD of SMS Hospital, Jaipur between January 2010 to October 2010. The study type was purely observational, purposive and prospective.

STUDY TYPE: Observational and **STUDY DESIGN:** Purposive, Prospective study.

SAMPLE SIZE: The study comprised of 51 HIV+ Cases

CASE DEFINITION: Patients with HIV/AIDS having positive Elisa test were studied after obtaining an informed consent.

INCLUSION CRITERIA: 1. Patients who fulfilled the case definition (HIV/AIDS WHO clinical criteria and positive ELISA test)

2. Patients who were willing to give an informed consent and were not on ART.

EXCLUSION CRITERIA: Patients who were not willing to give an informed consent or on ART were not included in the study.

DATA COLLECTION: Patients were examined in the ART centre (not on ART) and Department of Skin and STD of SMS Hospital, Jaipur. They were made to sit on an examination stool/chair with proper illumination. For safety of both examiners and patients surgical grade latex gloves and disposable mouth masks and head cap were used. Intra oral examination was done under proper

illumination using dental mirror and probe when required to examine the oral cavity. The disposable items were discarded properly in hazardous waste disposable bags.

Clinical data of patients were recorded in the case record form (CRF). The demographic details were recorded along with their presenting complaints. Relevant past and family history, history of systemic illness, local examination and a detailed oro-facial examination was recorded in the preformed CRF. The investigation performed were CBC, LFT, RFT, blood sugar estimation, chest X-ray wherever required and CD4 count.

CD4 count plays major role in management of HIV as a measure of immune status of the PLWHA. It is important for the following reasons:

1. CD4 count provides estimate of degree of existing immunodeficiency. Immunodeficiency is responsible for HIV positive individuals getting converted to AIDS.
2. Morbidity and mortality in HIV positive cases is due to opportunistic infections and the risk of oral lesions increases remarkably when CD4 count declines less than 200 cells/ cu mm.
3. CD4 count is the mainstay for starting ART and is also helpful in determining the outcome of ART.

Blood samples were drawn by venipuncture from the cubital veins in a sterile EDTA vial. A minimum of 100 microlitre whole blood is required for counting of CD4 +T cells. Human lymphocytes are broadly divided into 3 major populations based on their biological functions and cell surface antigen expression that is T lymphocyte, B lymphocyte and natural killer lymphocytes. Samples collected are stored in the dark in room temperature. The cells were vortexed thoroughly at low speed to reduce aggregation before running them on the flow cytometer. BD FACS caliber is the machine used for flow cytometry.

When the whole blood is added to the reagent the fluorochrome labeled antibodies binds specifically to leukocyte surface antigen. During acquisition the cells travel past the laser beam and scatter laser light. The stained cells scatter fluorescent signals which are detected by the flow cytometer.

REVIEW: Age distribution is more prevalent in patients were in the age group of 26 to 45 (74.5%). This is the age group when people are more sexually active and prone to acquiring the HIV infections due to unprotected sexual activities and same as reported in literature. [1,2]

Gaurav Sharma et al [3] studied Oral manifestations as predictors of immune suppression in a HIV-/AIDS-infected population in south India with objectives to analyze the relationship between oral manifestations and absolute CD4 count, assess the sensitivity, specificity, positive predictive values and negative predictive values of HIV-associated oral manifestations for identifying immune suppression, and evaluate association of oral diseases with age, gender, smoking, alcohol, and medications used. In this study, oral manifestations were seen in 80.5% of patients, these findings suggest that these oral manifestations, especially pseudomembrane candidiasis, are highly predictive of severe immune suppression (CD4 <200 cells/mm³). In the absence of other clinical or laboratory information and AIDS, especially in relation to Asian context, where CD4 counts due to financial constraints are not done in every center, this finding assumes clinical implication. The study showed the correlation of immune status of patients with oral manifestations in an Indian cohort and which were comparable to studies conducted by Khongkuntian et al[4], Kerdpon et al [5] Oral manifestations act as harbinger for the development of AIDS (CD4+ counts <200 cells/mm³),

thus, implicating the need for careful oral examination for the benefit of the patient who is not only immune-compromised but also possibly psychologically devastated. The accessibility of oral cavity and the clinical relevance of oral HIV lesions cannot be overlooked.

OBSERVATIONS & RESULTS: Table No. 1 is showing the Age distribution of the patients included in this study. There were 31 males and 20 Females. The maximum number of patients were in the age group of 26 to 45 (74.5%). This is the age group when people are more sexually active and prone to acquiring the HIV infections due to unprotected sexual activities. Only 11.76 patients were in the age group of 46 to 55.

Table 2 is showing the co-relation of mean CD4 Count with the oral lesions observed in the present study. It was observed that Oral Hairy leukoplakia patient was having the CD4 count of 26. The mean CD4 count of patient having Herpes zoster was 119.5 while patients showing Hyperpigmentation were having a mean CD4 Count of 146.0. The patients having linear gingival erythema were having a mean CD4 count 130.0. Patients showing Angular cheilitis were having mean CD4 count of 147.33 whereas oral candidiasis patients showed a mean CD4 count of 233.75.

DISCUSSION: In present study maximum numbers of patients were in the age group of 26 to 45 years (74.5%). In this age group people are more sexually active and also known as socially productive age group. This finding corresponds with the typical Demographics pattern of HIV epidemic that HIV affects the younger sexually active and socially productive age group. It was observed by other investigators also in the same age group patients with HIV and Oral manifestation such as by G. Sharma et al [3] in his study reported the mean age for man & women was 35.3 years. Symptoms of HIV disease can appear at any time during the course of HIV Infection. Spectrum of illness changes as the CD4+T cells count declines. [2]

CD4 count is a measure of immune status and plays major role in HIV disease due to following reasons. [6]

1. Morbidity and Mortality in HIV individuals is due to opportunistic infections. The risk of opportunistic disease increases markedly when CD4+ cell count declines to less than 200 cells /mm³
2. CD4 count provides estimate of degree of existing immuno deficiency. Immune deficiency is responsible for HIV +ve individuals getting converted to AIDS. Likelihood of developing AIDS within 3 years is significantly higher when CD4 count is low (less than 200 CD4 + T cells) compared to high CD4 + T cell count.
3. The initiation of antiretroviral therapy is also dependent on CD4 count.
4. Outcome of antiretroviral therapy is also dependent on CD4 count. Higher survival is associated with higher initial CD4 count.

In present study Oral manifestations were observed in 56.86% HIV/AIDS patients. Our results are comparable to Arendrof et al [7] study where they reported around 60.4% of cases having one or more oral lesions in South African Subcontinent. Besides this P. Khong [8] reported around 38% patients having oral lesions.

X-Liu et al [9] reported the increased frequency of oral candidiasis with decrease in CD4 Lymphocytic count. G. Sharma et al [3] also found a significant association between oral candidiasis & immunosuppression. G Sharma et al [3] studied the oral manifestations as predictors of immune

suppression in AIDS patients in South India. They also mentioned pseudomembranous candidiasis as highly predictors of immune suppression.

In our study the correlation of mean CD4 count with other oral lesions were angular Cheilitis in 5.8% patients having mean CD4 count 147.33, Black hairy tongue in 1.9% patients with mean CD4 count 192, Herpes Zoster in 3.9 % patients with mean CD4 count 119.5, Hyperpigmentation in 7.84% patients with mean CD4 count 146, Linear gingival erythema 3.9% patients with mean CD4 count 130, Oral Ulcerations 15.68% patients with mean CD4 count 171.5. Nearly same observations have been reported by other author. [10,11]

Oral manifestation act as harbinger for development of AIDS thus implicating the need of careful oral examination of AIDS patients. Oral manifestations of HIV particularly Oral Candidiasis & OHL have important predictive value for immune suppressions of HIV infection. The presence of these lesions suggests HIV infections & may be one of the important sign of evolution to the AIDS.

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TABLE1 – Age and sex distribution of study samples

Table 1 Age Distribution				
Age Group	SEX		Total	%
	Male	Female		
16 - 25	3	2	5	9.8
26 - 35	10	9	19	37.25
36 - 45	14	5	19	37.25
46 - 55	2	4	6	11.76
56 - Above	2	0	2	3.9
Total	31	20	51	

TABLE 2: Correlation of CD4 count

CO-RELATION OF MEAN CD4 COUNT WITH ORAL LESIONS					
Group	Male	Female	Total	%	Mean CD4 Count
Angular Cheilitis	2	1	3	5.8%	147.33
Black hairy tongue		1	1	1.9%	192.0
Herpes zoster	2	0	2	3.9%	119.5
Hyperpigmentation	3	1	4	7.84%	146.0
Linear gingival erythema	1	1	2	3.9%	130.0
Oral Candidiasis	4	4	8	15.68%	233.75
Oral Hairy leukoplakia	1		1	1.9%	26.0
Oral Ulcerations	3	5	8	15.68%	171.5
Total	16	13	29	56.86%	145.76