Incidence of Oral candidiasis among HIV infected patients-Cohort prospective study.

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Abstract- HIV is a scourge people living with HIV/AIDS were more exposed to different kinds of OI's due to the low absolute cd4+ T-lymphocyte count, poor drug adherence, co morbid conditions and lost to follow up of ARV drug. In Indian prospective a very limited literature were documented on correlation of CD4 count with respect to Oral candidaisis. In this context Present study aims to determine the incidence of oral Candida albicans infection in HIVpositive patients and correlate with age matched CD4 count in Government tertiary care hospitals. A cohort prospective study conducted at Department of ENT, Bangalore Medical College and Research Institute, Bangalore .All Eligible recruited patients meet their inclusion and exclusion criteria. Laboratory parameters like CD4 count, Hb, ESR were collected with lesser error and more accuracy. Total 1063 patients screened for the oral candidiasis. Confirmed and suspected patients recruited for the study. Overall prevalence was 25(2.35%) and statistically significant with the sex and age matched frequency. More number of patients acquired candidiasis between 50-200 micro/Dl, the emphasis of lower CD4 count is likely to prove and expressed the opportunistic infections and Oral candidiasis. Early inception of HAART, Good ARV drug adherence can reduces the incidence rate.

Index Terms- CD4 count, HAART, ARV, Oral candidaisis, HIV, AIDS

I. INTRODUCTION

Oral candidiasis (also known as oral thrush) is a common opportunistic mycosis (yeast infection) of Candida specie son the mucous membranes of the mouth (1-2). C. albicansis the most common species of yeast isolated from patients with oral candidiasis (3). The incidence of opportunistic infections due to Candida albicans and other Candida species has been increasing (4). Oral Candidiasis is the most common HIV related oral lesion and most patients are infected with a strain originally present as a commensal of the oral cavity (5). The low absolute CD4+ T-lymphocyte count has traditionally been cited as the greatest risk factor for the development of oropharyngeal candidiasis and current guidelines suggest increased risk once CD4+ T lymphocyte counts fall below200 cells/ μ(6).The first step in the development of a candidal infection is colonization of the mucocutaneous surfaces(6). HIV infection is not only associated with increased colonization rates but also with the development of overt disease. During the course of HIV infection, the rate of Candida infection is inversely related to the CD4 counts of the patient which in turn depends on the use of Anti-retroviral treatment(7). HIV-positive patients carry more and a greater variety of yeasts than HIV-negative subjects. The prolonged management of oral candidiasis in HIV patients might cause the development of drug resistance candidiasis (8). Although the introduction of antiretroviral therapy (ART) has had a major impact on the infectious complications of AIDS (9), Candidiasis still remains a common opportunistic infection in HIV-infected patients(6). Hence this present study is aimed to determine the incidence of oral candidiasis in HIVpositive patients and correlate with age matched CD4 count in Government tertiary care hospitals.

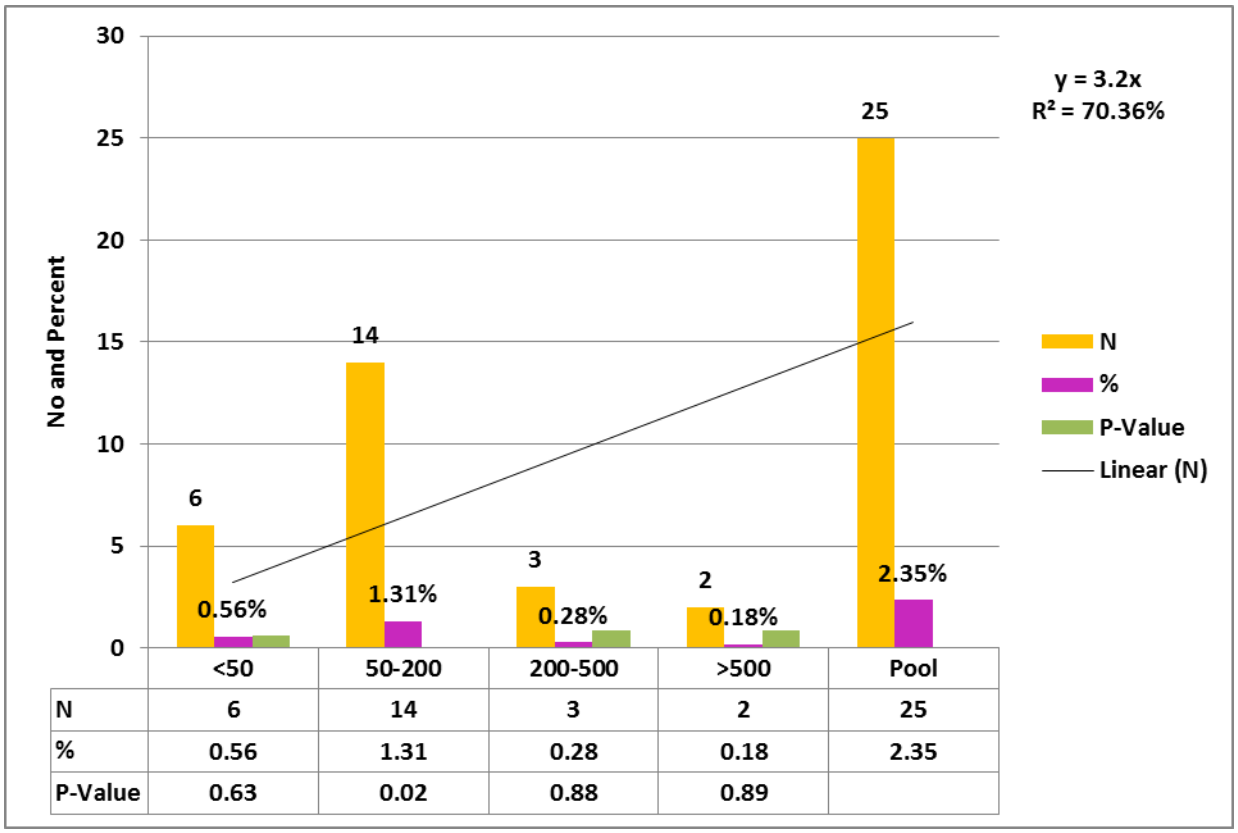
II. MATERIALS AND METHODS

A cohort prospective study conducted at Department of ENT, Bangalore Medical College and Research Institute, Bangalore .All Eligible recruited patients meet their inclusion and exclusion criteria .The data was obtained from written conscent during 2011-12 .Laboratory parameters like CD4 count, Hb, ESR were collected with lesser error and more accuracy. Duration of HAART, onset of Oral Candida, past history of the OI's and demographic profile were collected from the ARV registers. Collected data was analyzed by using SAS-6.50 version. Univaraiate Binary Logistic regression and correlation methods were used to draw the hypothesis.

RESULTS

Total 1063 patients screened for the oral candidacies. Confirmed and suspected patients recruited for the study.AIDS defining illness, paediatric population and ARV defaulter from past one year and second line patients were exclude from the study group.Asper the study result during 2012 ;26 cases newly identified and exposed for oral candiadiasis the incidence rate for a specified period of time was Incidence 2.35 ($\frac{25}{1063}$2.35). Males comprise 68.26% followed by females.

RESULTS



	<50	50-200	200-500	>500	Pool
N	6	14	3	2	25
%	0.56	1.31	0.28	0.18	2.35
P-Value	0.63	0.02	0.88	0.89	

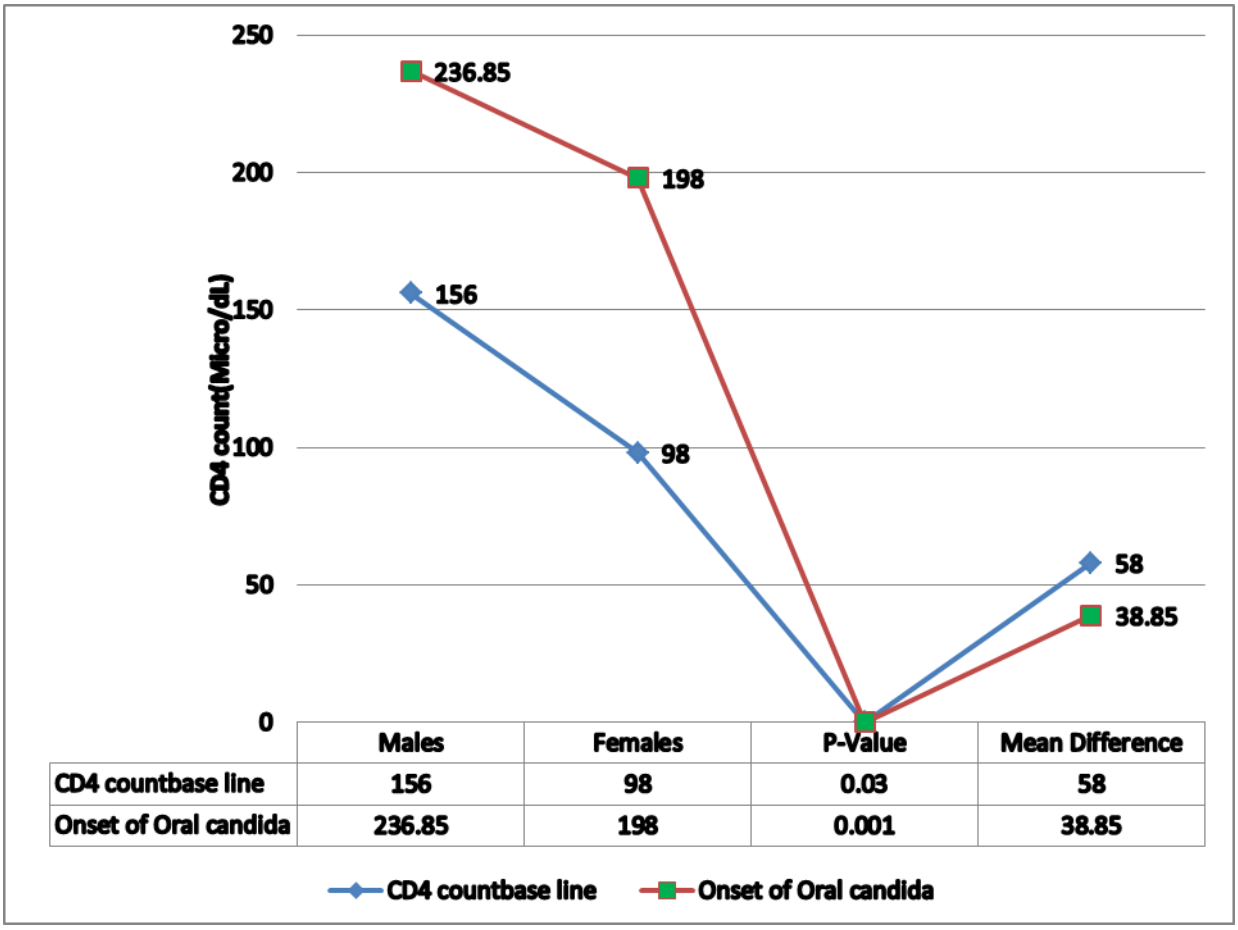
Fig (1): Occurrence of Oral candidiasis with respect to CD4 Count.

The occurrence of Oral candidiasis with respect to CD4 count presented in Graph (1), As per the study result CD4 count between <50 06(0.56%) p=0.63, 50-200 14(1.31%) p=0.02, 200-500 3(0.28) p=0.88 and >500 CD4 count was 02(0.18%) p=0.89 .Overall prevalence was 25(2.35%) and statistically significant with the sex and age matched frequency. More number of patients acquired candidacies between 50-200 micro/Dl, the emphasis of lower CD4 count is likely to prove and expressed the opportunistic infections and Oral candidacies.

Tab (): Patients characteristics-HAART details

Sl	Defined variables	N (%)	CI-95%	P-Value
I.	**Risk factors**			
	Homosexual	03(12.0%)	1.36-4.55	**0.630^{ns}**
	Heterosexual	20(80.0%)	18.63-23.25	**0.002***
	Injectable drug user	02(8.0%)	1.63-3.05	**0.871^{ns}**
II	**Classification of HIV**			
	AIDS	06(24.0%)	5.48-7.26	**0.362^{ns}**
	AIDS-Complex	19(76.0%)	18.63-20.14	**0.001***
III	**WHO Clinical stage**			
	Stage-I	03(12.0%)	2.01-4.20	**0.442^{ns}**
	Stage-II	04(16.0%)	3.68-5.09	**0.602^{ns}**
	Stage-III	06(24.0%)	5.11-7.88	**0.242^{ns}**
	Stage-IV	12(48.0%)	11.45-13.64	**0.003***
IV	**Mean Duration of HAART Weeks**	13.64±2.56	11.47-14.63	**0.026***
V	**HAART Drug adherence (%)**	<76.0%	74.22-77.05	**0.001***
VI	**Waited percent of defaulter of HAART theraphy**	26.36%	23.61-27.85	**0.002***
VII	**Co morbid condition**	46.22%	45.86-47.05	**0.001***

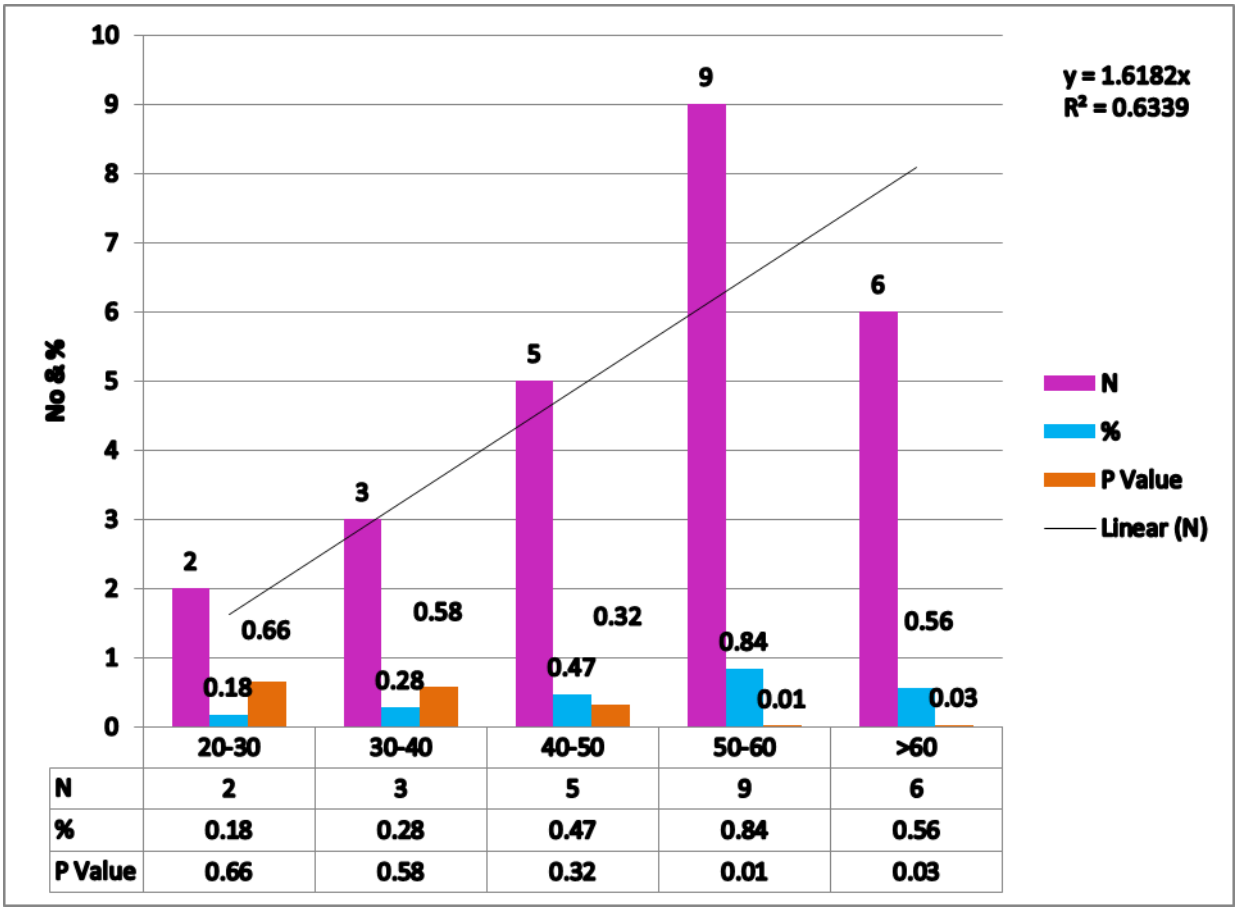
VIII	**HIV TB co infection**	63.25%	62.11-65.09	**0.002***



	Males	Females	P-Value	Mean Difference
CD4 countbase line	156	98	0.03	58
Onset of Oral candida	236.85	198	0.001	38.85

Fig (2): Defined mean difference of CD4 count

The base line CD4 count is correlated with CD4 count at onset of Oral candidiasis of both genders. Lower CD4 count (IQR 125- 160, Mean 156.00 ±36.98 micro /Dl median CD4 count was 116 in males and females was IQR 56- 102, Mean 98±65.36 micro /Dl median CD4 count was 46)p=0.001 is more prone to express the oral candidiasis. The mean difference of CD4 count from base line to onset of Candida was 58 and 38.85 micro /dl for both the gender.



	20-30	30-40	40-50	50-60	>60
N	2	3	5	9	6
%	0.18	0.28	0.47	0.84	0.56
P Value	0.66	0.58	0.32	0.01	0.03

Fig (3): Age matched distribution of candida

Many authors documented age is considered as one of the determinants for manifestation of OI's and candida[1]. Older age group and fewer CD4 count at the time of inception of HAART should expressed higher incidence of OI's in PLHIV .The study well documented and try to find out the age matched distribution of Candida. By the use of clinical difference and precision of sample size we have calculated the age group of individuals. Age group between 20-30years was found to be 02 cases (0.18%), 30-40 03(0.28%), 40-50 years 05(0.47%) ,50-60 years 09(0.84) and more than > 60 years accounted for 06 (0.56%) . The age group 50-60 and > 60 years showed statistically significant and positively associated with lower base line CD4 count, poor drug adherence and lesser the mean duration of HAART therapy Fig(3).

Image (1): Oral candidiasis with Lower CD4 count (150 micro/Dl)

III. DISCUSSION

The incidence of Oral candidiasis is most common manifestation in HIV infected population. Lower CD4 count between 200-250 micro/Dl, age and gender are considered as predisposing factors for the increasing incidence rate. Elevated CD4 count for both male and Female was 58 micro /dL and WHO clinical staging (Stage IV) ,poor drug adherence, no regular ART follow ups, co morbid conditions ,immunological and clinical conditions of the patients were considered as the determinants for occurrence of Oral candidiasis and Oi's. Age matched frequency or class interval >60 years were more prone to Oral candidiasis due to their poor defined indicators of local or systemic factors altering the host immunity and general health condition of the patients. Present study determined or evaluated patients with lower CD4 count were more exposed to the incidence of Oral candidiasis.

The incidence of opportunistic infections due to *Candidaalbicans* and other *Candida spp*. has been increasing (4)..Rapid identification of candidiasis is important for the clinical management of immunocompromised patients (4).During the course of HIV infection, the rate of Candida infection is inversely related to the CD4 counts of the patient which in turn depends on the use of Anti-retroviral treatment (6).The numbers of PLHIV 1013 screened in this study were found to be 25 new cases. This is probably because most men rarely go for routine checkup, until the disease has reached symptomatic stage. Among the patients examined only three reported having pain when swallowing food and having altered taste, this suggested that oral thrush candidiasis in most cases asymptomatic. The carriage rate of oral candidiasis in HIV seropositive people in Bangalore city is 2.46 % (25/1013). This rate is lower than the 9.68% reported by NACO, Govt of India, The low prevalence of oral *Candida* in this study may be attributed to patient strict adherence to their antiretroviral regimen. However. Routine checks for opportunistic infections including oral candidiasis are important and should be carried out at intervals to help monitor disease progression and also prevent subsequent complications such as candidemia. Identifying *Candida* to its species level is important because it helps guiding proper treatment and early inception of HAART. HIV seropositive people whether or not on ART are predisposed to oral candidiasis. This does not agree with most studies, (18) reported that following the introduction of highly active antiretroviral therapy (HAART) there was reduction in occurrence of opportunistic infections, prevalence of oral manifestation and oral candidiasis. Arribas et al. (19) also suggested that the reduction in the frequency of oral candidiasis was only related to immunological improvement after inception of antiretroviral therapy including protease inhibitor (P1), which increase the number of CD4+ cells. However, some HIV positive patients with relatively high CD4+ cell counts develop oral candidiasis (6).

IV. CONCLUSION

The rate of oral candidiasis is inversely related to the CD4 counts. Older age group and fewer CD4 count should expressed higher incidence of OI's in PLHIV.Early inception of HAART, Good ARV drug adherence can reduces the incidence rate.

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