

ORIGINAL ARTICLE**ORAL CANDIDOSIS IN A GROUP OF HIV POSITIVE NIGERIANS****AGBELUSI G.A** , SOFOLA O.O** , UTI O.G*********Department of Preventive Dentistry, College of Medicine, University of Lagos, Nigeria. *****Department of Preventive Dentistry, Lagos University Teaching Hospital Idi-Araba, Lagos, Nigeria.**ABSTRACT**

Oral candidosis is one of the commonest oral manifestations of HIV infection. The objective of this study was to determine the prevalence of oral candidosis in relation to CD4 counts and use of antiretroviral drugs among Nigerian HIV infected patients.

Design: A cross-sectional study in which an interviewer administered questionnaire was used to collect data from 244 consecutive HIV patients aged 16-65years. They were examined for oral lesions including Oral candidosis. The presumptive criteria as defined by ECC Clearing House were used for diagnosis of oral lesions.

Result: Forty-six (18.9%) patients presented with oral candidosis of various types. Pseudomembraneous candidosis was the commonest variant seen in 60.0% of those who presented with intra oral candidosis. Prevalence of oral candidosis was significantly associated with use of antiretroviral drugs ($p<0.05$), low CD4 counts ($p=0.010$) and time since diagnosis ($p=0.005$).

Conclusion: Prevalence of candidosis was found to indicate a worsening of HIV disease in the group of patients studied and use of antiretroviral drugs was associated with reduced prevalence. Oral candidosis could be a useful marker of patients with low CD4 count. In view of this, emphasis should be placed on the importance of systematic examination of the oral cavity in all medical examination of HIV infected patients.

Key words: HIV/AIDS, Nigerian, Oral candidosis, prevalence.

INTRODUCTION

The oral cavity is an important source of diagnostic and prognostic information in patients with HIV infection¹. HIV infection has been associated with

various oral lesions which were classified by the EC Clearing house on oral problems related to HIV infection in 1991². Oral candidosis is one of the lesions that were classified as "Lesions strongly associated with HIV infection" and it is an important marker of the progression of the infection.

It may indeed be the initial manifestation of the disease and it is the first sign of infection in about 10% of HIV infected adults³. Oral candidosis may present in several distinct variants

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of which Pseudomembraneous candidosis and Erythematous candidosis are the most prevalent occurring in 20 – 25% of patients¹.

Oral candidosis frequently complicates HIV disease in Africa⁴. Studies on the oral manifestations of HIV infection in Nigeria showed that candidosis was the most prevalent oral lesion accounting for 80.0% of lesions seen in one study⁵. Other studies recorded a prevalence of between 33.3%⁶ and 36.4%⁷.

Pseudomembraneous candidosis require host infection with a virulent species of candida⁸ and may occur very early in the course of HIV infection¹ as well as in association with reducing CD4 counts⁹. Also the use of HAART is said to reduce the incidence of HIV associated oral lesions such as candidosis¹⁰. Other factors that may affect the incidence of oral candidosis include malnutrition induced mucosal disruptions which when combined with poor oral hygiene are expressed as candidosis, angular cheilitis and severe periodontal disease¹¹.

The aim of this study was to describe the occurrence of oral candidosis in HIV infected persons in Nigeria. It also aims to describe the effect of the use of HAART and CD4 counts on the occurrence of oral candidosis.

MATERIALS AND METHODS

The study was carved out of a larger study of the oral manifestations of HIV and barriers to oral health care among HIV positive patients in Nigeria. Two hundred and forty four consecutive patients aged 16 – 65 years whose status had been confirmed prior to the time of examination who were attending dedicated clinics in two teaching hospitals in Lagos, Nigeria over a period of nine months were examined. Consent was sought and got from willing

participants who were examined using an interviewer administered questionnaire. Information such as demographic characteristics, time since diagnosis, current medication and last recorded CD4 count were collected. Diagnosis of oral candidosis was made using the presumptive diagnostic criteria as defined by the EC Clearing House. Examination recorded presence or absence of oral lesions including oral candidosis. Data analysis was done with EPI-info version 6.04 statistical software. Chi -square test of association was used to determine the significance of differences. Difference was taken as significant at the level of $p < 0.05$. Multivariate analysis was used to construct a model in which the dependent variable was occurrence of oral candidosis and the independent variables were CD4 count, use of antiretroviral drugs, and time since diagnosis.

RESULTS

The ages of the patients ranged between 16 and 65 years with a mean of 37.9 years, SD 9.34. The majority were in the 30 – 39 year age group. One hundred and thirty seven (56.1%) were females while 43.9% (n=107) were males. Table 1 shows age and gender distribution of the patients.

TABLE 1 : AGE AND GENDER DISTRIBUTION OF PATIENTS

AGE GROUP	FEMALE	MALE	TOTAL
10 – 19	1 (0.7%)	0 (0.0%)	1 (0.4%)
20 – 29	42 (30.7%)	3 (2.8%)	45 (18.4%)
30 – 39	57 (41.6%)	48 (44.9%)	105 (43.0%)
40 – 49	23 (16.8%)	39 (36.4%)	62 (25.4%)
50 – 59	13 (9.5%)	13 (12.1%)	26 (10.7%)
60 - 69	1 (20.0%)	4 (80.0%)	5 (2.0%)
TOTAL	137 (56.1%)	107 (43.9%)	244

Most of the patients had HIV1 (82.4%), 1.6% had HIV2, 4.9% had a co-infection of HIV1 and HIV2 while 11.1% were unspecified in the case notes. One hundred and eighty three (75%) of the patients were on antiretroviral drugs while 61 (25%) had not commenced therapy.

PREVALENCE OF CANDIDOSIS

Oral candidosis of various clinical forms were diagnosed in 18.9% (n=46) of the population. Table 2 shows the various clinical presentations.

TABLE 2 : CLINICAL PRESENTATIONS OF ORAL CANDIDOSIS

PRESENTATION	FREQUENCY	PERCENTAGE
INTRAORAL CANDIDOSIS	28	11.4
CANDIDOSIS AND ANGULAR CHEILITIS	12	4.9
ANGULAR CHEILITIS ONLY	6	2.6
NO CANDIDOSIS	198	81.1
TOTAL	244	100

Pseudomembraneous candidosis was the most prevalent form seen in 60% (n = 24) of the patients. Angular cheilitis was diagnosed in 7.4% (n=18) of the patients while chronic hyperplastic candidosis was not diagnosed in any of the patients. Table 3 shows the intra-oral presentations of candidosis diagnosed in the study population.

TABLE 3 : TYPES OF INTRA ORAL CANDIDOSIS

TYPE	FREQUENCY	PERCENT
PSEUDOMEMBRANEOUS	24	60.0
ERYTHEMATOUS	14	35.0
MIXED	2	5.0
TOTAL	40	100

The use of antiretroviral drugs was significantly associated with the prevalence of candidosis. Fewer of the patients on antiretroviral therapy presented with candidosis, while a majority 60.9% (n= 28) of those not on therapy had candidosis (P < 0. 05). This is shown on Table 4.

TABLE4: THE ASSOCIATION BETWEEN ANTIRETROVIRAL DRUGS AND THE PREVALENCE OF CANDIDOSIS.

USE OF ARV	CANDIDOSIS ABSENT	CANDIDOSIS PRESENT	TOTAL
NOT ON ARV	33 (54.1%)	28 (45.9%)	61 (100.0%)
ON ARV	165 (90.2%)	18 (9.8%)	183 (100.0%)
TOTAL	198 (81.1%)	46 (18.9%)	244 (100%)

Mantel Haenszel $\chi^2 = 38.74$
P= 0.00000.

CD4 counts were recorded for 84.42% (n = 206) of the patients while it was unavailable for the others. The CD4 counts ranged between 20 and 650cells/mm³. Most of the patients with diagnosed oral candidosis had low CD4 counts (CD4 less than 300) while none of the patients whose CD4 was above 500/mm³ presented with candidosis. This was statistically significant (p = 0.010). This is shown on Table 5.

TABLE 5: EFFECT OF CD4 ON PREVALENCE OF CANDIDOSIS.

CD4 COUNT (MM ³)	CANDIDA ABSENT	CANDIDA PRESENT	TOTAL
0 - 200	28 (71.8%)	11 (28.2%)	39 (100.0%)
201- 300	97 (85.8%)	16 (14.2%)	113(100.0%)
301- 500	47 (96.0%)	2 (4.0%)	49 (100.0%)
ABOVE 500	5 (100.0%)	0 (0.0%)	5 (100.0%)
TOTAL	177(85.9%)	29 (14.1%)	206 (100%)

$\chi^2 = 11.30, df = 3, p = 0.01$

Majority of the Pseudomembraneous candidosis was diffused while a few were localised. Patients whose CD4 counts were below 100 had widespread oropharyngeal presentations.

Time since diagnosis ranged between 1 and 96 months with a mean of 19.46, SD 19.8 months and median 12.0. Majority 115 (47.1%) of the patients were diagnosed in the last one year. There was a statistically significant association between time since diagnosis and prevalence of oral candidosis ($p = 0.005$). Majority of the patients who presented with candidosis were diagnosed in the last one year.

There was no significant association between occurrence of candidosis and other variables such as age, sex, and type of HIV infection.

Multivariate analysis showed that low CD4 counts and use of antiretroviral drugs were significant variables.

DISCUSSION

Oral candidosis is one of the most common oral fungal diseases seen in association with HIV infection⁴. It may be the first presenting sign of HIV disease and an important marker of disease progression¹². As the prevalence of HIV infection is continually increasing in Nigeria, the dentist may be the first health care professional to recognise the manifestation of HIV in an undiagnosed HIV infected patient. Dentists therefore must be prepared to recognise oral manifestations in an undiagnosed HIV infected patient.

The prevalence of oral candidosis among the group of HIV patients studied was 18.9%.

Pseudomembranous candidosis was the most common variant (60.0%) diagnosed in the group. This is similar to other Nigerian studies^{6,7} and indeed to findings in other parts of the world^{13,14}. The Erythematous variety was found in 35% of the patients with intraoral candidosis and mostly as depapillation of the dorsum of the tongue. Both the erythematous and pseudomembranous

forms have been associated with increased risk for the subsequent development of opportunistic infections classifying the patient as having AIDS as defined by the Centre for Disease Control¹⁵.

The introduction of Highly Active Antiretroviral Therapy (HAART) appears to have reduced the incidence of HIV related oral lesions and in a prospective study, oral candidosis was virtually eliminated with the use of HAART³.

Currently antiretroviral therapy (ART), and HAART are combination therapies of three or more drugs that delay the onset of AIDS. The patients in our study were on the triple drug therapy consisting of two Nucleoside reverse transcriptase inhibitors and a Non-nucleoside transcriptase inhibitor. There was a significant reduction in the prevalence of Candida infection with the use of antiretroviral drugs in the population studied. This is in agreement with previous studies. In the United Kingdom study, prevalence of oral manifestations including oral candidosis was significantly reduced in subjects on dual and triple therapy in comparison with patients on monotherapy or no therapy^{16,17}.

Time since diagnosis, which appeared to be significantly associated with prevalence of candidosis, may be because of the therapy patients have undergone, as prevalence of candidosis reduced with increased time since diagnosis. Its confounding significance was eliminated in the multivariate analysis.

The CD4 cell count is a very useful laboratory tool to monitor the course of

HIV induced immune deficiency. A CD4 count of 200cells/mm³ marks an especially important point in the course of HIV infection, as it is the AIDS indicator count.

The majority of the patients who presented with candidosis in our study had low CD4 counts (0 – 300cells/mm³). This is in agreement with previous studies¹⁸.

CONCLUSION

The prevalence oral candidosis in this study was 18.9% .The use of ART was found to significantly reduce the prevalence of oral candidosis but rises with decreasing CD4 counts.

Prevention and early treatment of opportunistic infections like candidosis are especially important in HIV patients to maintain quality of life and possibly to prevent more serious complications.

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