Facial lipoatrophy in a group of HIV positive Nigerian patients on antiretroviral drugs.

Oyetola EO [1], Oninla OM [2], Adesina OM [3], Olasode AA [4].

[1]Department of Preventive and Community Dentistry, Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife, Osun State, Nigeria. [2]Department of Dermatology and Venereology, Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife, Osun State, Nigeria, [3]Department of Oral and Maxillofacial Surgery and Oral pathology, Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife, Osun State, Nigeria. [4]Department of Dermatology and Venereology, Obafemi Awolowo University Teaching Hospitals

ABSTRACT

Objective: To describe the pattern of presentation of facial lipoatrophy (FL) among HIV positive patients on HAART in a Nigerian teaching hospital.

Methods:

A cross-sectional study, conducted at the Institute of Human Virology, Nigeria (IHVN) clinic in Ile Ife. The clinic is routinely run by dermatologists and hematologists. Informed consent was obtained from consecutive subjects attending the IHVN clinic during the study period. Information on their biodata, HAART use and results of investigations were obtained using structured questionnaires. General physical and intra oral examination for lipoatrophy was carried out on all the patients. Data analysis was done using STATA 12 software.

Results: Ninety participants, mean age 40.5 years, participated. Sixty percent of the participants were on lamivudine, zidovudine and nevirapine combination therapy (Group A), 40% were on Lamivudine, Efavirenz, and Tenofovir (Group B). Facial lipoatrophy (FL) was present in 4(4.44%) of the participants. Only 50% of the participants with FL were aware of the lesion. Patients with FL had lower CD4 counts than controls but not significant, p=0.169.

Conclusions: The prevalence of facial lipoatrophy in HIV patients on HAART was 4.4%. FL does not appear to constitute a major problem to HIV patients on HAART in this study.

Keywords: Facial lipoatrophy, HIV, antiretrovirals, CD4 count.

INTRODUCTION

The advent of the highly active antiretroviral (HAART) drugs brought about tremendous improvements in the management of HIV patients: reduced mortality and morbidity rates, reduced oral manifestations and improved quality of life. However, the major drawbacks in this positive development are the associated complications that subsequently impose major problems for HIV-infected patients[1]. Orofacial structures are also involved, the reported orofacial complications in HIV patients on antiretroviral drugs are: erythema multiforme, xerostomia, lipomatosis, taste disturbance, perioral parasthesia and lipodystrophy[2]. Lipodystrophy is a clinical syndrome characterized by abnormal body fat distribution, usually manifest in three forms: lipoatrophy, lipoaccumulation and a mixed syndrome in HIV patients on antiretroviral drugs[3,4]. Lipoatrophy is most apparent in the face but are also visible on the legs, buttocks, arms and the trunk. Lipoatrophy in the face (facial lipoatrophy) has been described as anatomical changes in the face due to progressive loss of malar fat and temporal fat, giving the affected patients an aged appearance, a condition that some patients described as bringing back the stigma associated with HIV[5]. Lipodystrophy has been linked to the use of stavudine (to a less extent zidovudine) among other nucleoside reverse transcriptase inhibitors (NRTIs) and protease inhibitor ritonavir[6].

HIV/AIDS is one of the major cause of death globally and the leading cause of death in Africa[7]. In Nigeria with a population of about 130 million, the prevalence of HIV is 4.1% with about 360,000 people presently on antiretroviral therapy[8]. There is paucity of information on the pattern of distribution and impact of the facial lipoatrophy on the quality of life on Nigerian patients on antiretroviral drugs unlike in the developed world. The study aims to determine the prevalence of facial lipoatrophy among HIV patients

Correspondence: Dr EO Oyetola
Department of Preventive and Community Dentistry,
Obafemi Awolowo University,
Ile Ife, Osun State, Nigeria
E-mail: phemyhoye12@yahoo.com,

on antiretroviral and assess their view about the condition.

MATERIALS AND METHODS

The study was cross-sectional assessing facial lipoatrophy in HIV patients on antiretrovirals.

Participants were consecutive patients on antiretroviral medications who attended the Institute of Human Virology, Nigeria (IHVN) clinic from August 2014 to September 2015. The IHVN clinic is located within Obafemi Awolowo University Teaching Hospitals premises and provides services to patients with HIV in the entire state with referrals from the surrounding states. The clinic is run by the Dermatology and Haematology teams of the hospital.

The study was done in accordance with the provisions of the declaration of Helsinki. Ethical clearance for the study was obtained from the Institutional Review Board of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. A written informed consent was obtained from each patient.

Information on patient's biodata such as age, gender, address, ethnicity, marital status and occupation was obtained from the participants. Relevant information on past medical history, history of HIV treatments progress and drug history were obtained and recorded in a structured questionnaire.

All patients were examined by an oral medicine specialist. Examination was done with strict adherent to infection control practices. The examiner checked for facial asymmetry. Diagnosis of lipoatrophy was made from the results of subjective clinical examination done by the examiner and observation of the patients[5]. Other significant extra oral findings were recorded

Oral soft tissue (tongue, floor of the mouth, buccal mucosa, palate and others) and hard tissues were examined for any lesions.

Blood sample was taken for CD4 count assessment.

Data analysis was done using Stata 11 statistical software (Statacorp, College Station, Texas). Descriptive statistics was used to characterize socio-demographic variables such as age, sex, marital status and occupation. For descriptive continuous variables, the mean, median, minimum value, maximum value and appropriate measures of variability were determined depending on if they are normally distributed or not. For descriptive variables that are categorical, simple frequency and percentages were determined.

RESULTS

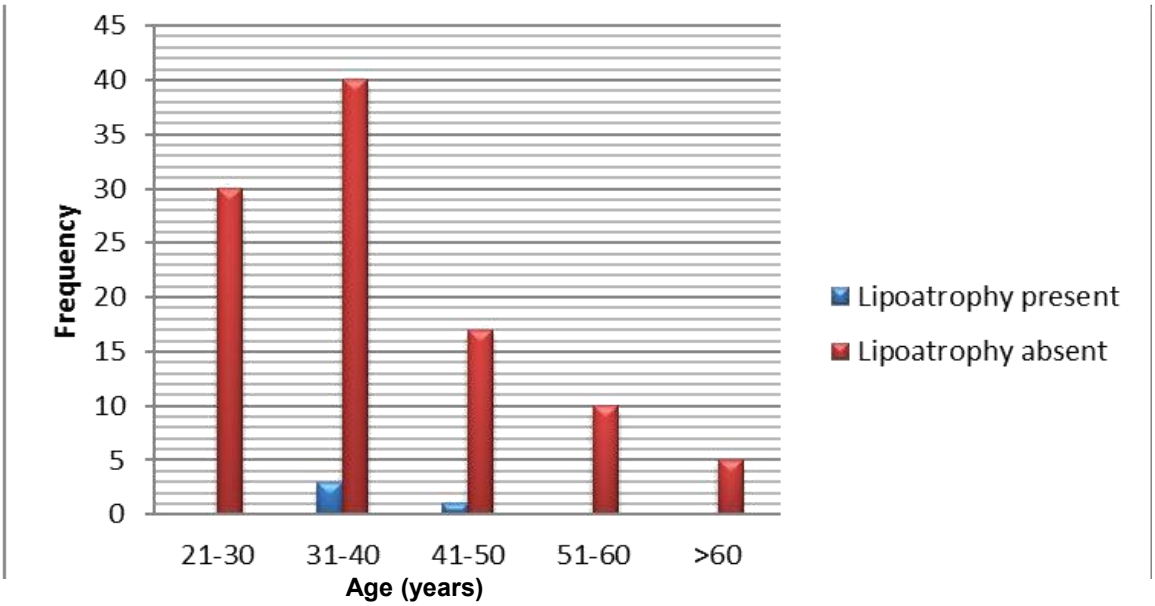
A total of 90 participants took part in the study comprising 24 males and 66 females. The mean age of the participants was 40 years (SD=10.8). A large proportion (47.8%) of the participants were within the age group of 31 to 40 years. Most (72.2%) of them were traders practicing christian religion (87.7%) and of Yoruba ethnicity (81.1%) (Table 1).

Table 1. Sociodemographic of Respondents

Variable	Frequency	Percentage
Sex		
Male	24	26.7
Female	74	73.3
Occupation		
Trading	65	72.2
Driving	6	6.7
Civil Service	5	5.6
Teaching	1	1.1
Tailoring	4	4
Roadside Mechanic	2	2.2
Police Officer	1	1.1
Clergy	1	1.1
Ethnicity		
Yoruba	82	81.1
Urhobo	3	3.3

Igbo	2	2.2
Isekiri	1	1.1
Igala	2	2.2
Religion		
Christianity	79	87.7
Islam	11	12.3

Fig 1: Relationship between age category and facial lipoatrophy



HIV patients on antiretroviral therapy were mostly in the 31 to 40 year age category; this category also contain 75% of those with lipoatrophy, followed by 41 to 50 years age category. No patient with facial lipoatrophy was at the extreme of age groups. (Fig 1).

Fig 1: Relationship between age and facial lipoatrophy

A total of 60 patients were on Lamivudine, Zidovudine and Nevirapine combination therapy out of which 3 patients developed facial lipoatrophy representing 75% of all cases of facial lipoatrophy seen in this study. The remaining 25% was found in the patients with Lamivudine, Efavirenz and Tenofovir combination therapy, the difference was however not statistically significant, p=1.000. Sex distribution also showed that one patients out of 23 males, and three out of 63 females had lipoatrophy, the difference was also not significant, p=1.000. The mean age of patients with facial lipoatrophy (35.7 years) is lower than the mean age of those without the condition. The difference, however, was not statistically significant, p=0.1863 (Table 2).

Table 2. Distribution of subjects with lipoatrophy by the type of antiretroviral, sex and mean age.

Variables	Facial lipoatrophy Present (%) N=4	Facial lipoatrophy Absent (%) N=86	p-value
Antiretyrovirals			
Lamivudine+Zidovudine+ Nevirapine	3(75%)	57	1.000
Lamivudine+Efavirenz+Tenofovir	1(25%)	29	
Sex			1.000
Male	1	23	
Female	3	63	
Mean age (years)	35.7(4.5)	40.7(10.9)	0.1863

Stastistical test used - Fisher's exact

Figure 2. A patient with facial lipoatrophy

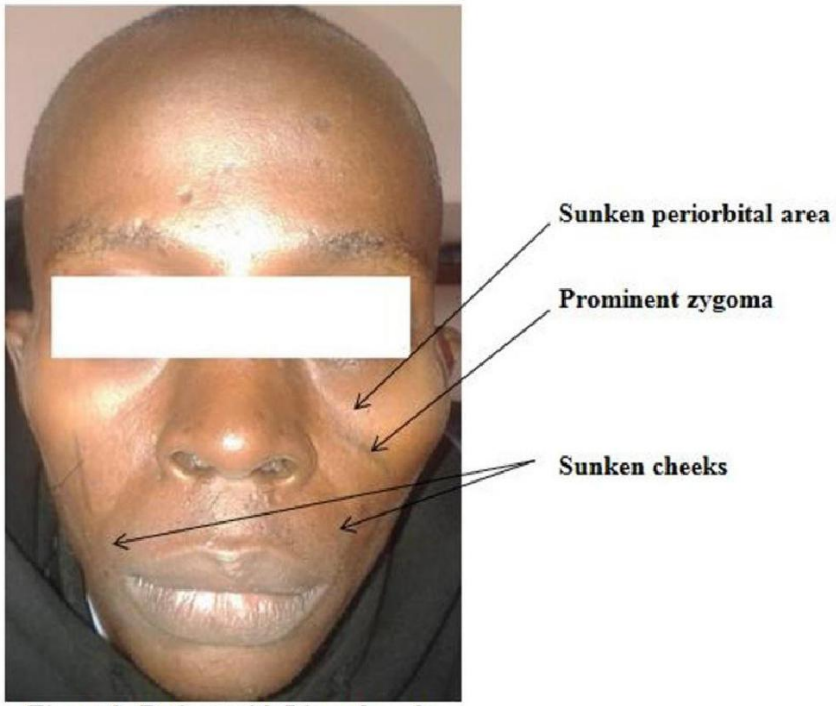


Figure 2: Patient with Lipoathrophy

Among all the patients who developed facial lipoatrophy, only 2 (50%) noticed a change in their facial profile prior to presentation. They all claimed no one has ever drawn their attention to it and they are not bothered about it. One patient noticed that the disfigurement is not limited to the face while the remaining patients were not sure. They all claimed that the change in their facial appearances had never affected their life in any way but all who had the lesion would like to have it treated.

Table 3: Participants' views on facial lipoatrophy.

Characteristics	Yes (%)	No (%)	Not sure (%)
Do you notice any change in your facial Appearance after commencing the medication	2(50%)	1(25%)	1(25%)
Are you ever bothered about it	0	4(100%)	0
I Ias anybody drawn your attention to it	0	4(100%)	0
Do you think the change facial appearance had affected your life in any way	0	4(100%)	0
Is this change limited to your face	0	1(25%)	3(75%)
Do you want it treated	4(100%)	0	0

Patients with facial lipoatrophy had lower mean CD4 count (295 cell/m3) than those without the lesion, the difference was not statistically significant, p=0.1699. The time of initial diagnosis and duration of antiviral medication was higher in patients with facial lipoatrophy, the difference was however not statistically significant, p=0.8964 and .8808 respectively.

Table 4: Relationship between facial lipoatrophy, CD4 count and duration of usage of antiviral drugs

Variable	Lipoatrophy present(SD)	Lipoatrophy absent(SD)	p value
Mean CD4 count cell/m m blood	295(147)	429(29)	0.1699
Time of initial Diagnosis (months)	44(27)	30(21)	0.8964
Duration of antiviral drug use(months)	42(25)	29(3)	0.8604

Statistic Test used - Fisher's exact

DISCUSSION

The use of highly active antiretroviral therapy (HAART) in the management of HIV infection brought about reduction in the mortality and morbidity in HIV-infected patients by slowing the rate of progression to the AIDS stage[12]. There are, however, associated complications especially following its long time use. The present study focused on facial lipoatrophy, one of the complications of antiretroviral medications as proposed by Martinez et al[13]. Unlike majority of the earlier studies which produced little or no information in Nigerian/African population in the patients, this cross-sectional study was done in a group of HIV positive Nigerian population on HAART.

In this study, 4 out of 90 (4.4%) patients had facial lipoatrophy. This result is at variance with majority of documented studies which reported that facial lipoatrophy and associated other body changes do occur in 30-54%[14, 15] of patients on antiretroviral medication. Lefebvre E et al[16] evaluated 2,131 HIV patients on antiretroviral drugs for facial lipoatrophy, they reported a prevalence of 54%. In addition, their study reported a positive correlation between non-African origin and an increased risk of developing facial lipoatrophy. This indicates that the risk of developing facial lipoatrophy (FL) is lower among Africans. The study was done in a group of African population (Nigeria) and that may account for the reduced prevalence. The scientific explanation for the reduced prevalence of FL in African population is not clear, genetic variation and/or environment may play some role.

The age range of patients on antiretroviral was from 21 to 60 years, consistent with earlier findings[3,9,15]. This is expected since HIV affects a wide age range. The study also showed that 75% of facial lipoatrophy was found between the ages of 31 to 40 years while the remaining 25% occurred in the 41 to 50 years age group. This may be due to higher prevalence of HIV in younger age groups. The mean age of patients with FL years) was lower than those without it.

The highest percentage (75%) of facial lipoatrophy was found in patients on Lamivudine, Zidovudine and Nevirapine (Group A) combination therapy while remaining 25% was found in the Lamivudine, Efavirenz, Tenofovir (Group B) combination therapy. Group A regimen contains two NRTIs (Lamivudine, Zidovudine) and one NNTIs(Nevirapine) while Group B contains one NRTIs (Lamivudine) and two NNRTIs (Efavirenzand Tenofovir). This showed that FL is commonest when the combination therapy include more of NRTIs. Scientific literature had reported NRTIs, NNRTIs and protease inhibitors are the major antiretrovirals that predispose to FL[17]. Alteration in body metabolism (lipid metabolism changes), abnormal glucose homeostasis and increased insulin resistance are some of the reported mechanism[18]. Unlike earlier studies[9,19] that reported a male predilection, our study found female predilection of 3:1. Small sample size and general attitude of men in attending hospital may be contributory to this finding[16].

FL is a complication of antiretroviral drug following a long term use. Consistent with many studies [9,19] facial lipoatrophy was found in patients who had used antiretroviral for longer period (mean period of 42 month) when compared with those without it (mean period of 29 month). The difference was however not statistically significant. A larger sample size may show a statistically significant difference.

The relationship between CD4 count and FL has been established previously. Reduced CD4 count were widely reported in patients with facial lipoatrophy [9,21]. In this study, we found the mean CD4 count of 295 cell/m^3 of blood among subjects with facial lipoatrophy and 429 cell/mm3 of blood in those without it. Although, the differences was