

Oral Lesions in HIV/AIDS Patients on a highly Active Antiretroviral Therapy

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ABSTRACT

Background: Oral lesions have been reported to be the initial signs of human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) infection. The main objective of the present study was to observe the prevalence of oral lesions among HIV/AIDS patients undergoing highly active antiretroviral therapy (HAART) attending the antiretroviral therapy (ART) center in Kasturba Medical College and Hospital, Mangalore, Dakshina Kannada, Karnataka, India.

Materials and methods: One hundred and eight HIV/AIDS positive patients were evaluated by a single examiner. Patients' oral cavity was examined and the various oral manifestations detected were recorded.

Results: The most common extraoral manifestation was lipoatrophy, and intraorally, the most prevalent findings were intraoral pigmentation (42.6%) and candidiasis (27.8%). However, the prevalence of the most commonly associated lesions like Kaposi's sarcoma (1.9%) and linear gingival erythema (2.7%) was less.

Conclusion: Oral lesions are considered to be markers of progression of HIV into the final stage of AIDS. Advent of HAART has shown a significant reduction in the oral lesions and a better quality of life in patients with HIV.

Keywords: Acquired immunodeficiency syndrome, Highly active antiretroviral therapy, Human immunodeficiency virus, Oral manifestations.

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INTRODUCTION

Human immunodeficiency virus (HIV) infection is an ever-growing pandemic that can lead to acquired immunodeficiency syndrome (AIDS) in later stages. The virus was discovered in early the 1980s among homosexuals, and it belongs to the family of retroviridae.¹ Since its discovery, the viral infection has caused more than 25 million deaths worldwide.^{2,3} According to the World Health Organization (WHO) report in 2013, approximately 34 million people were suffering from HIV/AIDS and among them about 3.4 million were children below 15 years.⁴ In India, it was estimated that there were 5.6 million people living with AIDS.⁵ However, a decline in the death rate was observed among patients who received antiretroviral therapy (ART).⁶

Oral health can offer clues to various systemic disorders affecting the individuals, one such disease being HIV/AIDS. Oral lesions are not only indicators but can also be predictors of the progression of this disease, as well as its response to treatment. No oral lesion is unique to HIV. However, certain lesions are strongly associated with this disease. Seven cardinal lesions associated with HIV are oral candidiasis, necrotizing ulcerative gingivitis, necrotizing ulcerative periodontitis, linear gingival erythema, hairy leukoplakia, Kaposi's sarcoma (KS), and non-Hodgkin lymphoma.⁷

Even though various treatment modalities have been instituted, till date no medication has been able to eradicate this infection in totality. However, there is a deceleration in the death rate due to education and emergence of ARTs. Since the advent of highly active antiretroviral therapy (HAART) there has been a drastic reduction in the incidence of most HIV/AIDS-related oral lesions and an increase in life expectancy. Highly active antiretroviral therapy suppresses the viral multiplication and increases the CD4 cell count. If instituted in the early stage of the disease, HAART can also improve the quality of life of an individual. The therapy includes a combination

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of nucleoside reverse transcriptase inhibitors (NRTIs), non-NNRTIs, protease inhibitors, fusion inhibitors, entry inhibitors, and HIV integrase inhibitors.⁸

Studies pertaining to the oral manifestations of HIV/AIDS patients on HAART therapy are sparse. Hence, the present study was undertaken with the aim of evaluating the oral manifestations in HIV/AIDS patients on HAART.

MATERIALS AND METHODS

A cross-sectional observational type of study design was employed in the present work. The study was conducted among HIV positive patients visiting the ART center at Kasturba Medical College and Hospital, Mangalore, for HAART treatment. Patients who presented with oral manifestations were referred to the Department of Oral Medicine and Radiology for clinical examination and the diagnosis of the oral lesions. The study was approved by the Institutional Ethics Committee. Patients who were not on HAART were excluded from this study.

All the patients were informed about the purpose of this study, and information regarding demography, oral complaints, and medical and drug history was recorded. The patients were evaluated for both extraoral and intraoral lesions on the dental chair under artificial light using disposable instruments, double gloves and mask, and protective eyewear.

Data was entered into a Microsoft excel spreadsheet and Statistical Package for the Social Sciences (SPSS) 20 was used for analysis. Chi-square statistical analysis was carried out to see the association of the various oral manifestations with HAART.

RESULTS

The study group consisted of 108 randomly selected HIV positive patients, among which 64 were males and 44 were females. The youngest was 10 years old and the oldest was 71 years old, with a mean age range of 43.48 (±10) years. Two children were below 15 years (1.8%). Most of the patients were between 41 and 50 years (42.6%) (Table 1). Most of the patients were housewives (n=32, 29.62%), jobless (n=21, 19.44%), and employed (n=87, 80.55%).

Of the 108 patients, 64 (59.3%) had extraoral manifestations, 106 (98.1%) had soft tissue changes, and 96 (88.9%) had hard tissue manifestations. The most common extraoral manifestation observed was lipoatrophy (n=42, 38.9%) and herpetic lesions (n=3, 2.8%). Intraorally, soft tissue lesions seen in the descending frequency were intraoral pigmentation (n=46, 42.6%), candidiasis (n=30, 27.8%), gingivitis (n=20, 18.8%), major aphthous ulcer (n=6, 5.6%), lichenoid reaction and hairy leukoplakia (n=4, 3.7%), malignancy and linear gingival erythema (n=3, 2.7%), KS (n=2, 1.9%), and ranula (n=1, 0.9%). The hard tissue findings were dental caries (n=66, 61.1%), periodontitis (n=52, 48.1%), and wasting disease (n=8, 7.4%), and others are shown in Table 2.

Oral manifestations that were not characteristic of HIV/AIDS in the present study were oral submucous fibrosis (3.7%) and leukoplakia (8.3%). Most of the patients had multiple lesions (n=94, 87%), 10 (9.3%) patients had single lesions, and 4 (3.7%) subjects had no lesions (Table 3).

DISCUSSION

In the present study, the majority of the patients were in their 4th decade, which was similar to the results of Bravo et al.⁹ Further, a male predominance was observed in the present study, confirming the reports of Ashish Bodhade et al¹⁰ and Ranganathan et al,¹¹ who noted that there was a male predominance in South India and even other parts of the world.

However, there have been reports of female predominance in Africa.¹² The low percentage of children (< 15 years) in our study could be due to the reason that we had less of pediatric patients (1.8%) in our study. Most of the females were housewives, which was similar to studies done by Annapurna et al.^{13,14} Majority of them were illiterate and could have been victims due to their poor knowledge about transmission from their spouses.

The most common extraoral manifestation observed in the present study subjects was lipoatrophy, which could be due to the side effect of HAART, especially NRTIs.¹⁵ Majority of the patients who had lipoatrophy were on zidovudine, and three were on stavudine, confirming the

Table 1: Distribution of gender and age

Sex * Age cross-tabulation			Age					Total
			<30	31-40	41-50	51-60	>61	
Sex	Male	Count	4	12	30	13	5	64
		% within sex	6.2%	18.8%	46.9%	20.3%	7.8%	100.0%
	Female	Count	4	16	16	6	2	44
		% within sex	9.1%	36.4%	36.4%	13.6%	4.5%	100.0%
Total	Count	8	28	46	19	7	108	
	% within sex	7.4%	25.9%	42.6%	17.6%	6.5%	100.0%	

Table 2: Various oral manifestations

		Count	Column N %
Oral submucous fibrosis	Absent	104	96.3
	Present	4	3.7
Depapillated tongue	Absent	105	97.2
	Present	3	2.8
Malignancy	Absent	105	97.2
	Present	3	2.8
Leukoplakia	Absent	99	91.7
	Present	9	8.3
Periodontitis	Absent	56	51.9
	Present	52	48.1
Post herpes	Absent	105	97.2
	Present	3	2.8
Gingivitis	Absent	88	81.5
	Present	20	18.5
Lipoatrophy	Absent	66	61.1
	Present	42	38.9
Dental caries	Absent	42	38.9
	Present	66	61.1
Edentulous	Absent	56	51.9
	Present	52	48.1
Periapical granuloma	Absent	107	99.1
	Present	1	0.9
Hairy leukoplakia	Absent	104	96.3
	Present	4	3.7
Aphthous ulcer	Absent	102	94.4
	Present	6	5.6
Candidiasis	Absent	78	72.2
	Present	30	27.8
Fissured tongue	Absent	104	96.3
	Present	4	3.7
Intraoral pigmentation	Absent	62	57.4
	Present	46	42.6
Ulcer	Absent	107	99.1
	Present	1	0.9
Ecchymosis	Absent	107	99.1
	Present	1	0.9
Xerostomia	Absent	105	97.2
	Present	3	2.8
Kaposi's sarcoma	Absent	108	100.0
	Present	0	0.0
Wasting disease	Absent	100	92.6
	Present	8	7.4
Lichenoid reaction	Absent	104	96.3
	Present	4	3.7
Ranula	Absent	107	99.1
	Present	1	0.9
Linear gingival erythema	Absent	105	97.2
	Present	3	2.8

Table 3: Distribution of oral lesions

	Count	Column N %
Number of oral lesions	0	3.7
	1	9.3
	2	13.9
	3	25.9
	4	18.5
	5	21.3
	6	5.6
	7	0.9
8	0.9	

Nail changes in the form of longitudinal melanonychia and onychoschizia were observed in the present study. Cribier et al²⁰ found nail changes in their study subjects and linked it with immunosuppression. Blindness was also noted in a patient. Kestelyn and Cunningham²¹ reported that blindness is a common complication and that these patients had a shorter life expectancy.

Intraorally, melanin hyperpigmentation was the most common manifestation, which was similar to the study by Nittayananta et al⁸ and Sharma et al,²² who reported that it could be due to HAART (zidovudine). However, Vasudevan et al²³ in their study reported that pigmentation of the oral mucosa could be due to stimulation of melanocytes, which could be associated with immunopathologic changes. Sharma et al²² reported that it was more predominant among Indian patients on HAART.

Candidiasis was the 2nd most common finding in the present study, and erythematous candidiasis was the most common variant, which is similar to the results of Sharma et al.²² Prevalence of candidiasis among HIV patients is reduced, which could be due to high awareness among patients, thus seeking treatment in the early stages.²³

Gingivitis was more common than periodontitis in our study, which was similar to the study by Masouredis et al,²⁴ where they reasoned that it could be due to negligence of oral care. Aphthous ulcer, which is common in immunocompromised patients, was seen less in our study and is consistent with the study done by Ranganathan et al¹¹ in India.

Oral hairy leukoplakia (OHL) and KS are more prevalent in western and eastern countries when compared to Asian countries.²⁵ The former is more common among people with CD4 count less than 200; however, it can also be found in patients with CD4 count more than 500, indicating severe immunosuppression.^{26,27} Similar to our study findings, Vasudevan et al²³ reported that OHL was rare among the Indian population. Kaposi's sarcoma is the most common tumor associated with HIV in Africa and USA, but the prevalence in India is less, even though the incidence of AIDS is very high.^{28,29} Kaposi's sarcoma

results of Angela et al.¹⁶ Hakeem et al¹⁷ reported two cases of lipodystrophy in patients on HAART. Lipodystrophy is highly prevalent in patients on HAART, and once it occurs, there is less chance of it getting reversed.¹⁸ Similarly, Pujari et al¹⁹ reported high prevalence of lipoatrophy in patients taking long-term HAART in western India.

could be one of the first manifestations of an occult HIV infection.³⁰ Thomas and Java³¹ reported that among KS patients, oral lesions could be the first to occur and palate, oropharynx, and gingiva were the most common sites. In our study, both oral (palate) and eye involvement were seen.

Chidzonga and Rusakaniko³² found that 88.5% of subjects with ranula were HIV positive and majority of them were children; hence, they concluded that ranula should be considered as an HIV/AIDS-associated lesion. On the contrary, in the present study, patients who had ranula were adults. Extensive fibrosis of the mucus salivary gland or inflammation or both could be the reason for causing obstruction leading to formation of mucocele.³³

Similar to the reports of da Silva et al (2008), hard tissue findings in the present study were more common than the soft tissue manifestations. The common hard tissue findings in descending order were dental caries, edentulousness, periodontitis, wasting disease, etc.³⁴

A drawback of the present study was that the subjects were not monitored further to know about the progression of the disease, whether new lesions occurred, or whether the existing lesions resolved. Further research could be focused on evaluating the association of CD4 count with respect to the various oral manifestations.

CONCLUSION

Human immunodeficiency virus is a condition that displays a wide spectrum of oral manifestations. Even though HAART has improved the quality of life, increased life expectancy, and caused drastic reduction in the oral manifestations among HIV positive patients, oral manifestations still can act as markers for diagnosis and progression of the disease as well as for its response to treatment.

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