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Oral Manifestations of HIV In Children of Navi Mumbai - An Institutional Based Study

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ABSTRACT

More than 1000 children are newly infected daily with Human immunodeficiency Virus(HIV) and of these more than half would die as a result of AIDS due to the lack of access to HIV treatment. HIV disease varies considerably in children. Among those infected prenatally, some experience few or no symptoms for several years, whereas in others the disease progresses rapidly. The risk factors that influence the development of such oral manifestations include low CD4+ T cell count, xerostomia and lack of highly active antiretroviral therapy(HAART) [1-10] Oral health is intrinsically linked to both physical and mental well-being, as oral lesions can compromise dental aesthetics and interfere with essential functions such as speech, chewing, and swallowing—ultimately affecting a patient's quality of life. In HIV-positive individuals, the integration of oral health care into medical treatment is crucial. This includes the prevention, early diagnosis, and effective management of oral conditions.[11-15] Health professionals must be equipped to recognize, diagnose, and treat oral pathologies by understanding their clinical manifestations, etiological agents, and associated local and systemic risk factors. Early detection of oral lesions, particularly acute conditions like gingivitis and necrotizing periodontitis, allows for timely and prioritized treatment. Therefore, the development and implementation of strategies are aimed at preventing, controlling, and reducing oral pathologies should be a priority in the care of HIV-positive patients, as this can significantly reduce morbidity and improve overall health outcomes in this vulnerable population.

Keywords: oral manifestations, HIV, AIDS

Introduction:

With the successful introduction of HAART, oral health care providers are now more likely to encounter children and adolescents who are having HIV/AIDS efficiently. The treatment with HAART is primarily directed at inhibiting viral replication, as well as preventing and managing opportunistic infections and malignancies. In case of the children above the age of five years, a combination of Stavudine, Lamivudine, Nevirapine or Zidovudine, Lamivudine, Nevirapine are given.[16-25] These drug combinations are given at a dose of around 1mg. b.i.d. per kilogram of body weight. In case of hypersensitivity to Nevirapine the drug combination is given with Nevirapine.

Regimen I	Regimen II	Regimen III(In Nevirapine sensitivity)
Zidovudine	Stavudine	Zidovudine & Lamivudine
lamivudine	Lamivudine	or
Nevirapine	Nevirapine	Stavudine & Lamivudine

Table 1 : Highly active antiretrovial therapy (HAART) drugs used for the treatment.

The advent of HAART has reduced the incidence and type of oral lesions as found in many studies. However, these studies are mostly done in adults and studies related to the incidence of oral lesions and particularly children are few, particularly in India. In this context, oral lesions HIV +ve children receiving HAART are studied. Differences in the incidence of oral lesions among the HIV +ve children receiving HAART and not receiving HAART were also studied.An attempt is also made to identify whether the oral manifestations were exclusive to HIV children of Navi Mumbai.

Aims of the Study:

To identify the oral manifestations of HIV in children receiving HAART in Navi Mumbai population.

Materials and Methods:

The study comprised 95 children receiving HAART. 95 HIV +ve children not receiving HAART and 95 HIV -ve children were also included for comparing the manifestations of HIV. Statistical analysis was done using Fisher's Chisquare test.
Group I : HIV +ve on HAART
Group II :HIV +ve withouy HAART

Results :

- Children in Group I (HIV +ve on HAART) were randomly picked at anti-retroviral therapy(ART) center in D.Y.Patil School of Medicine, Navi Mumbai. Written consent was obtained from the Parents of these children before recording the cases. The age of these children ranged from five to fifteen years. The oral cavity was thoroughly examined by trained dental surgeons. The total sample of 95 children in Group I were divided into two groups(Group IA and Group IB) based on their CD4+ T cell count and the time of oral examination.

Group I A : Included patients with CD4+ T cell count less than 250 per cubic mm.
Group I B : Included patients with CD4+ T cell count more than 250 per cubic mm.

- Children in Group II(HIV +ve without HAART) were selected to find the efficacy of HAART to reduce the incidence of oral manifestations. Group II consists of 95 children who came to the ART centre for first time without previous history of anti-retroviral therapy.
- Group I consists of 95 HIV positive children with 43 males and 52 females.(55%:45%)
- Group III : consist of 95 children without HIV. These children were selected from same age group and same socio-economic status. These children were selected to identify whether the oral manifestations in HIV were exclusive to HIV +ve children.

The diseased conditions evolved with following:-
1) Dental caries:
Eldridge et al, in their study reported that caries prevalence was high in HIV-infected children. They concluded that these children should be considered as high caries risk and receive appropriate dental care, in terms of both treatment and preventive services. In the present study we found that 33(26%) out of 95 HIV +ve children on HAART had dental caries. Twelve out of these 33 children had rampant dental caries involving almost all teeth. Dental caries was the most predominant finding that was recorded in the current study making 26% of the total number of cases.(Figure 1)
2) Candidiasis:
Candidiasis is the most common manifestion of HIV infection both in adults and children. The most common form of oral candidiasis is pseudomembranous form(oral thrush) followed by angular cheilitis, papillary hyperplasia. Many studies had shown that oral thrush is a marker for rapid HIV disease progression and death.(Figure 2)
3) Angular Cheilitis:
Out of the 17 lesions that were observed,9 were pseudomembranous candidiasis, 2 were erythematous candidiasis and 6 were angular cheilitis.(Figure 3)
4) Apthous Ulcer :
Apthous ulcers are common in children infected with HIV. These aphthous ulcers tend to be larger and more painful when compared to the lesions seen in HIV-ve children.(Figure 4)

We found that 29% of these children were having their CD4+ T cell count >250. Statistical analysis showed that patients with low CD4+ T cell counts(Group IA) had more number of lesions when compared to the patients with higher CD4 T cell count(Group IB) (Graph 2)
The statistical analaysis using Fishers Chi Square test showed that hyperpigmentation was significantly more in children receiving HAART. Candidiasis, ulcerative stomatitis and gingival/periodontal lesions were more in HIV +ve children without HAART with statistical significance. However, the prevalence of dental caries was same in both the groups. (Table 1)

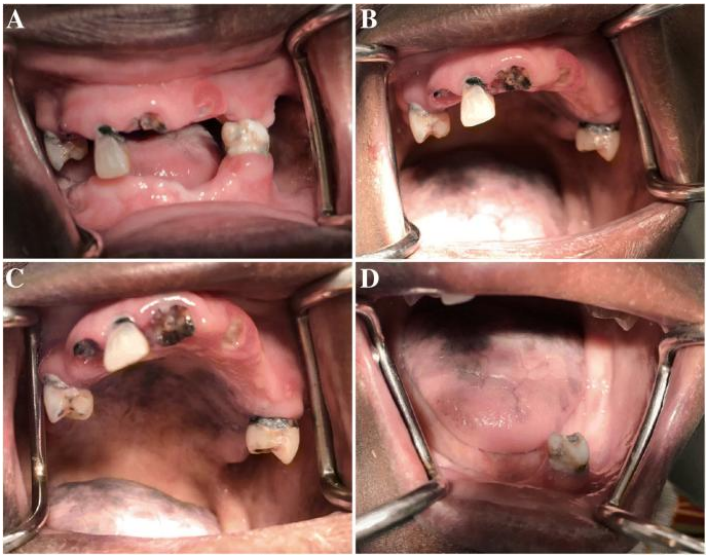
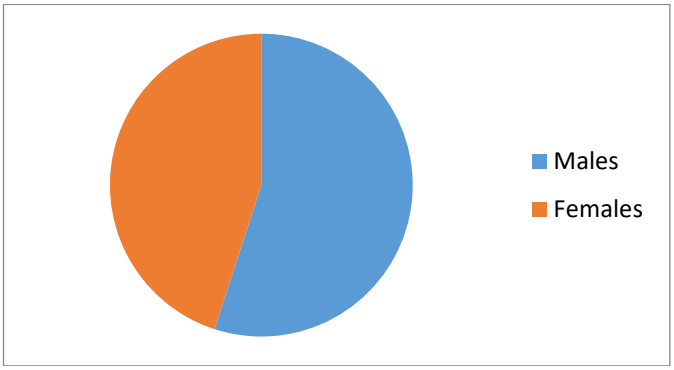


Figure 1 : Incidence of Dental Caries in HIV children

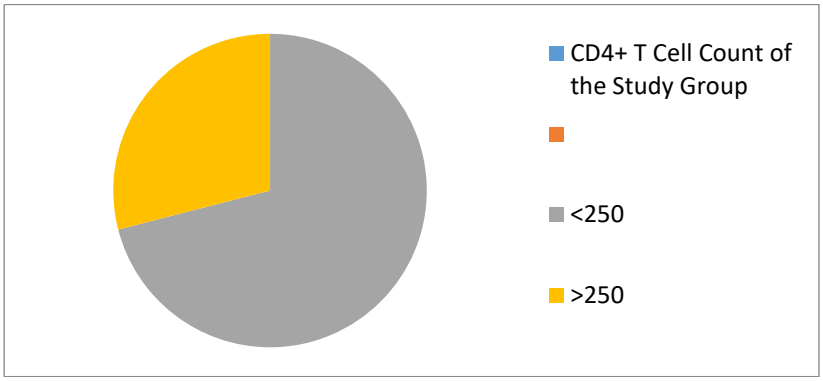
Figure 2 : Candidiasis of the Oral Cavity

Figure 3 : Angular Cheilitis of the Oral Cavity

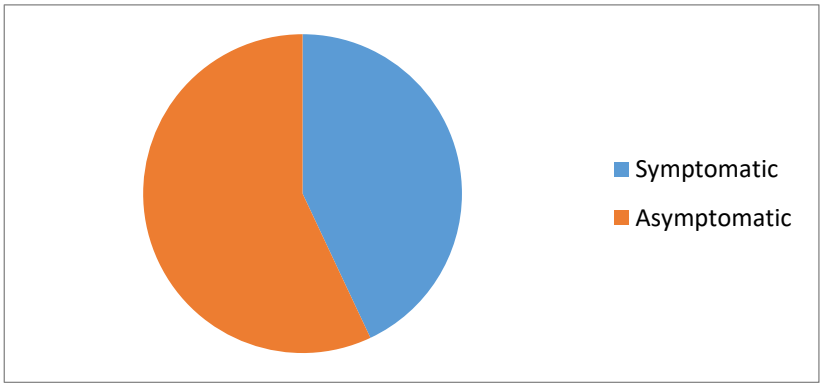
Figure 4 : Ulcerative Stomatitis in HIV children



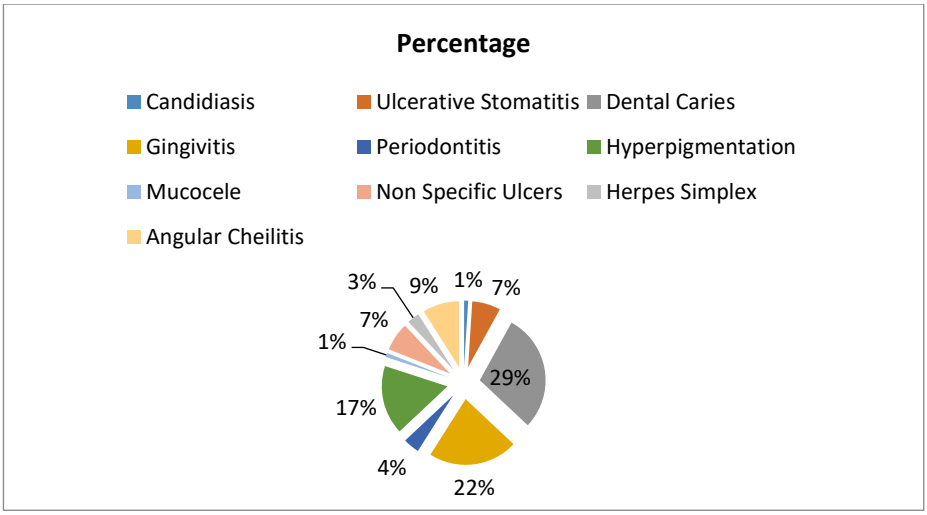
Graph 1 : Comparison of Males and Females in the study



Graph 2 : Comparative Study of CD4+ T Cell Count



Graph 3 : Comparative Study of Symptomatic and Asymptomatic Cases



Oral Lesions seen in the Current Study

Individual Lesions	Percentage
Candidiasis	1%
Ulcerative Stomatitis	7%
Dental Caries	29%
Gingivitis	22%
Periodontitis	4%
Hyperpigmentation	17%
Mucocele	1%
Non Specific Ulcers	7%
Herpes Simplex	3%
Angular Cheilitis	9%

Table 1 : Percentage division of lesions found in HIV children

Discussion:

Oral lesions that were observed in symptomatic children include candidiasis, ulcerative stomatitis, dental caries, gingivitis/periodontitis, hyperpigmentation and mucocele.(Graph 2) In this study we found that 43% of HIV +ve children on HAART had presented with some form of oral lesion.(Figure 2) The lesions that were observed in these children included candidiasis, ulcerative stomatitis, dental caries, gingivitis, periodontitis, hyperpigmentation and mucocele.

The advent of HAART had reduced the mortality and morbidity rates in positive individuals. This is due to reduction of HIV viral load and consequent recovery of immune system. Patients receiving HAART are protected to some extent against candidiasis, salivary gland disease, Kaposi's sarcoma and oral hairy leukoplakia.
The prevalence of all oral lesions has decreased by more than 30% since the introduction of HAART. The diagnosis of initial infection in children is established by PCR. However anti-retroviral drugs are not given to children below the age of 5years. In this study we found that 43% of HIV +ve children on HAART had presented with some form of oral lesion(Graph 2). The lesions that were observed in these children include candidiasis, ulcerative stomatitis, dental caries, gingivitis, periodontitis, hyperpigmentation and mucocele.
These lesions are considered to be the pathognomonic features of HIV infection. A reduction in the prevalence of oral lesions has been reported in the HIV-infected patients receiving HAART. In the present study, the regular use of HAART had probably reduced the prevalence of oral lesions. The reduction in the prevalence of oral lesions is attributed to the immune recovery on treatment with HAART.

In the second part of the study, the oral manifestations of children with Group I(HIV +ve with HAART) were compared to that of Group II(HIV +ve without HAART). The manifestations that were observed in Group I were taken into consideration for comparing the incidence of oral manifestations.

In the third part of of the study, the oral manifestations of children with Group I(HIV +ve with HAART) were compared to that of Group III(HIV -ve). The manifestations that were observed in Group I were taken into

consideration for comparing the two groups. (Table 2)Oral lesions observed in Group I(HIV +ve children receiving HAART) and Group II(HIV +ve children not receiving HAART) children with their statistical significance. The findings from this clearly show the efficacy of HAART to reduce the incidence of oral lesions. Our findings correlate with those of Rwenyonyi et al, who reported similar findings in their study.
Children without HIV(normal cohorts) had not shown candidiasis ulcerative stomatitis and hyperpigmentation. This finding clearly shows that candidiasis, ulcerative stomatitis and hyperpigmentation(Children receiving HAART) are exclusive to HIV infection as observed in many studies.[26-51]

Conclusion:

In the current study we observed a high incidence of periodontal diseases and dental caries when compared to other lesions such as candidiasis, non-specific ulcers and other lesions. This might be attributed to the poor oral hygiene practice by these children coming from lower socio-economic classes. However, this is a positive finding, considering the fact that periodontal diseases and dental caries can be kept under control through meticulous oral hygiene practices. The children as well as the caretakers in the current study were given adequate oral hygiene instructions and we believe that incidence of oral lesions can further overcome in HIV +ve children through proper oral hygiene practices.

Institutional Review Board Statement :
Not applicable

Informed Consent Statement :
Written informed consent has been obtained from the patient(s) to publish this paper.

Conflicts of Interest :
The authors declare no conflicts of interest

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