



Review Article

AIDS in children and dental management

Shaik Ali Hassan^{1,*}, Sumit Bhateja², Geetika Arora³, Francis Prathyusha¹¹Dept. of Dental, Dr. Francis Maxillofacial and Dental Clinic, India²Manav Rachna Dental College, Faridabad, Haryana, India³Inderprastha Dental College & Hospital, Ghaziabad, Uttar Pradesh, India

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ABSTRACT

HIV / AIDS has gained enormous proportions globally. In 2007, an estimated 33 million people living with HIV and an estimated 270,000 HIV-infected children younger than 15 years died of AIDS, HIV / AIDS may manifest in different forms and in the present day scenario, it is very important that dentists know that clinical presentation and management. In this article we will tell about transmission, oral manifestations and treatment.

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1. Epidemiology of aids in children

AIDS was first recognized in the US in the summer 1981. In 1983, HIV isolated from patients with lymphadenopathy, and in 1984 it was shown clearly to be the causative agent of AIDS. At the end of 2007, it is estimated that there are 33 million people living with HIV, of which 2 million children under 15 year. Number of children younger than 15 years living with HIV increased from 1.6 million in 2001 to 2.0 million in 2007. The number of people newly infected with HIV in 2007 was 2.7 million out of the 370, 000 of these children believed to be due primarily to the stabilization of HIV prevalence among women in general, and to increase the coverage of the program to prevent the transmission of mother to HIV¹ children.

1.1. Transmission of HIV

HIV can be transmitted perinatally from a mother to her newborn in three ways:

1. Transplacental during the pregnancy;

2. During delivery, when the baby passes through delivery channel (an estimated 40% of cases); or after birth through breastfeeding.²

In the absence of breastfeeding, about 30% of infant HIV infections occur in utero and 70% during delivery.³ The frequency of breast cancer transmission is 16% milk and most infections occur Early breastfeeding.⁴ A small fraction of HIV infections in children are caused by contaminated injections, transfusion of infected blood or blood products, sexual abuse, sexual relations or scarification.⁵⁻⁹ The use of antiretroviral therapy, avoidance of breastfeeding and elective caesarean sections have dramatically reduced the risk of perinatal HIV transmission in developed countries.¹⁰ Where HIV infected mothers treated early and aggressively with zidovudine (AZT), the possibility of transmission to newborn decreases from about 25% to less 8%.¹¹ Other drug used in preventing mother to child Nevirapine transmission.

2. Etiopathogenesis

The etiological agent of AIDS is HIV belongs to the family of human retroviruses and subfamily lentivirus. The most

* Corresponding author.

E-mail address: alishaikhassan@gmail.com (S. A. Hassan).

common cause of HIV throughout the world is HIV-1, while HIV-2 was first identified in 1986 in West African patients and was initially limited to West Africa.¹² The electron microscope shows that HIV virion is an icosahedral structure containing numerous external peaks formed by the two major envelope proteins, gp120 and external gp41 transmembrane. HIV is an RNA virus whose hallmark is the reverse transcription of its genomic RNA DNA by the reverse transcriptase enzyme. Replication cycle of HIV begins with the high affinity binding of the V1 region near the N-terminus to its receptor on the surface of the host cell, the CD4 molecule. The CD4 molecule is a 55-kDa protein found predominantly in a subset of T cells that are responsible for inducing helper or function in the immune system. To that HIV-1 to melt and into its target cell must also they bind to one of a group of co-receptors. The two main co-receptors for HIV-1 are CCR5 and CXCR4. Following binding, membrane fusion of the host cell occurs in a how the spiral spring through the newly exposed gp41 molecule.

Genomic RNA of HIV is uncoated and internalized in target cells. Reverse transcriptase enzyme which is contained in the virion infect then catalyzes the reverse transcription of the genomic RNA into double stranded DNA.

2.1. Diagnosis

Serological test method standard HIV antibody is screening enzyme immunoassay (ELISA) or Confirmatory Western Blot test. HIV test is read as negative, with results returned within 3-4 days if the enzyme initially run immunoassay or ELISA is negative. False negatives. They are possible in the window period (usually 10-14 days from seroconversion infection or the development of antibodies against HIV), but can last up to 6 months in rare case.¹³ A repeatedly reactive ELISA or enzyme immunoassay is the criterion for Western Blot test. Western Blot detects antibodies HIV-1 proteins including core polymerase and about with a false positive rate of 0.0004%.

2.2. Clinical course

Most children born with HIV infection do not have symptoms at the birth, and the time between birth and the first signs and symptoms varies considerably (14). Symptoms can appear at any time after incubation of the virus, however, the average age of pediatrics patients at the time of AIDS diagnosis is 12 months Oral manifestations are the first sign of infection in about half of all infected children.¹⁴ HIV infection in children is a clinical course that is similar but not identical to than in adults. Many of the previous demonstrations seen in HIV-infected adults are also seen in children, including developmental delay, fever, chronic diarrhea or recurrent, lymphadenopathy

and oral candidiasis recurrent or persistent. sixteen Spira et to the, 1999^{15,16} initial clinical signs occur reported often for developmental delay (51.9%) and persistent lymphadenopathy (44.4%). One of the notable differences seen in children compared to adults is marked increased susceptibility to bacterial infections, particularly encapsulated with polysaccharides organisms.¹⁷⁻¹⁹ This is probably due to the lack of acquired immunity in infants to most common pathogens.¹⁶ Bacterial infections such as drain otitis media, pneumonia, Haemophilus influenza and recurrent episodes of sepsis and meningitis are common In children. These infections are distinguished from those that occurs in the general population for their persistence and gravity. These nonspecific signs and symptoms can last weeks to months before the development of clinical signs indicative of AIDS (ie, opportunistic infections, diffuse interstitial pneumonitis lymphocytic, or malignancy). Lung disease is the most common cause of morbidity and mortality in children with HIV infection. according to Scott et to the,²⁰ the average age of clinical onset of the disease in infected infants perinatally was 8 months, with higher mortality the first year of life.

2.3. Medical Treatment

HIV infection the patient is two main objectives:²¹

1. Suppression of HIV viremia to maintain competition immune to drug use and management of toxicities of antiretroviral drugs later.
2. Prevention and treatment of opportunistic infections the result of immune suppression.

Viremia suppression of HIV

The review is more recent than the antiretroviral treatment. It should be offered to people with a CD4 count < 350 / microliter or plasma levels of HIV RNA > 55000copies / ml (Center for Disease Control and Prevention). Antiretroviral therapy (ART) mainly comprises four classes

antiretroviral agents

1. Nucleoside reverse transcriptase inhibitors (NRTI).
2. Non-nucleoside analogue reverse transcriptase inhibitors (NNRTIs).
3. Protease inhibitors and entry inhibitors.

Combination of NRTI, NNRTI and IP are used usually and referred to as highly active antiretroviral therapy (HAART).²²

2.4. Oral manifestation of AIDS

2.4.1. Candidiasis

Oral candidiasis is the most common lesions in children with AIDS and are often the first manifestation of HIV

infection.^{23–25} In children in developed and developing countries, oral candidiasis has been described as varying from 22.5% to 45%.^{26–33} Oral candidiasis can present different clinical forms including pseudomembranous, erythematous and angular cheilitis. Pseudomembranous candidiasis is characterized by the presence of white spots or yellow or plaque which may be located in any part of the oral cavity and can be wiped away to reveal an erythematous surface that may bleed. Erythematous or atrophic candidiasis clinically appear as the red areas are usually located on the ceiling and dorsum of the tongue but sometimes located on the buccal mucosa. Angular cheilitis can appear either alone or together with one of the other forms. Pseudomembranous infection seems to be the most common form in children³⁴ followed by type^{35,36} erythematous and angular cheilitis. However, erythematous disease has occasionally been reported more commonly than pseudomembranous.

2.4.2. Gingival and Periodontal disease

Gingival and periodontal diseases associated with HIV can be classified as linear gingival erythema, necrotizing ulcerative gingivitis (NUG) and periodontitis (NUP) and necrotizing stomatitis. Gingival disease seems to affect 4–20% of HIV-infected children, while the NUG and NUP are less prevalent, which vary 2.2 to 5%.^{37–41} HIV-associated gingivitis is found to be associated with both primary and permanent teeth. Lesions are characterized by a linear erythema of the facial gingival margin and are unresponsive to improved oral hygiene. In children, especially in primary teeth, may be general or local. In adolescents, the more common form seems to happen, comparable with lesions seen in adult patients. In HIV-infected adults, gingivitis can quickly develop into a destructive periodontal disease within a few months. In developed countries, ANUG has rarely if ever been reported in children under 10 years of age. However, in countries such as Africa and India, between malnutrition, child immunosuppression, ANUG and the more severe form, Noma, is a relatively common finding.

2.5. Dental Disease in HIV

HIV-infected children may be more responsible for dental caries affecting both deciduous and permanent teeth, rather than healthy subjects. However, while the frequency of caries may be higher than the healthy control group, DMFT and DMFT. HIV-infected children are not always higher than same age children in the same geographical area. Baby bottle caries have been associated with anti-HIV therapy. Caries prevalence of 28–33% among HIV-infected infants and infants have been reported.^{42,43} A greater frequency of caries in children with HIV infection may be associated with a high carbohydrate and sugar intake. It is needed to provide sufficient calories in children after failure

to thrive, and for consumption of sucrose-based medicine, especially antibiotics and antifungals, but also ARV such as zidovudine. In addition, the poor social status and use of low-strength fluoride also contribute to an increased risk of dental caries in children with HIV disease. Both delayed and accelerated eruption of permanent teeth and retention of primary teeth (affecting 25% of patients) observed in HIV-infected children in Romania.⁴⁴ The pattern may be associated with an accelerated eruption. Concurrent disease or previous dental and periodontal.⁴⁵

The exact cause of delayed tooth eruption is unknown, despite the poor health status of some children, especially when there is a nutritional deficiency. It may be an important co-factor.^{46,47} Hauk et al.⁴⁸ reported a correlation between the development of the children from HIV infection to AIDS and delayed tooth eruption and found the delay to be mostly associated with the severity of symptoms and CD4 depletion. Delayed eruption of primary and permanent teeth have been reported among HIV-infected children.⁴⁹ The lower number of teeth found in various ages could be due to lower socioeconomic status reflecting poor nutrition or health.

2.6. Preventing of vertical transmission

Diminishing vertical transmission from mother to child is an essential segment of any HIV counteraction procedure, especially in asset-poor nations, where up to 40% of pregnant ladies are tainted with HIV and 25–48% of their kids acquire the disease.⁵⁰ In populations where breast-feeding is extraordinary, most transmission (about 65%) happens during the intrapartum period, while in networks where breast-feeding is normal, baby blues transmission contributes from a third to a half of vertically transmitted diseases.

2.7. Prophylactic antiretroviral treatment

Antiretroviral treatment lessens vertical transmission by diminishing maternal viral burden and by giving prophylaxis to the newborn child when introduced. It is as yet muddled whether antiretroviral treatment is ideal directed at the antenatal, intrapartum, or baby blues that is all. Ongoing work proposes that more extended antenatal treatment with zidovudine (from 28 weeks' incubation onwards) is superior to a shorter course (from 36 weeks) and that the previous system joined with just three days of zidovudine treatment for the newborn child may be as compelling as a multi-week course of postnatal zidovudine.⁵¹ The utilization of mixed antiretroviral treatment that diminishes maternal viral burdens to imperceptible levels is presently standard in many created nations and diminishes HIV transmission rates to under 2% (with or without elective cesarean deliveries).⁵² At present, 95% of vertical transmission happens in creating nations. The test in these settings is to locate the briefest, most financially

savvy, and down to earth treatment routine. Nevirapine, a non-nucleoside invert transcriptase inhibitor, is by and by preferred; organization to the mother at the hour of conveyance what's more, one portion given to the child inside 72 hours of birth brings about a 47% decrease in viral transmission.⁵³ It is moderately modest at \$4 (£2.50) for the course, and its maker has consented to give it at no expense to forestall vertical transmission in some creating countries. In spite of this, and a suggestion from the World Health Organization and UNAIDS that the avoidance of vertical transmission of HIV be remembered for a base standard of care, most governments have been delayed in reacting. Reasons referred to incorporate challenges with giving the essential antenatal HIV screening, advising, and appropriation administrations furthermore, overstated feelings of trepidation about medication harmfulness and opposition.

2.8. During Pregnancy Care

Elective cesarean conveyance diminishes HIV transmission by over half contrasted and different methods of conveyance, with synchronous organization of zidovudine giving extra advantage (85% reduction) (56). However, this is an improper intercession in asset poor settings as a result of staff and cost limitations, and potential increments in postoperative complexities in HIV contaminated ladies. Frustrating outcomes have been acquired utilizing more straightforward and less expensive intercessions to forestall vertical transmission. Purging the vagina with chlorhexidine during work has demonstrated inadequate in African investigations, in spite of the fact that lavage previously films are burst may lessen transmission.^{54,55} Various mixes of micronutrient supplementation during pregnancy and baby blues have likewise neglected to decrease HIV transmission.⁵⁶ Vitamin A supplementation for pregnant ladies is likewise inadequate.⁵⁷

2.9. Stopping of feeding from breastmilk

The discussion over breast feeding taking care of versus recipe taking care of in asset poor settings proceeds. Late research on three key issues may impact future arrangement. One basic inquiry is whether bosom taking care of is related with unfavorable results for mother and newborn child. This is by all accounts the case. A Kenyan report contrasting bosom what's more, equation taking care of associates found, as anyone might expect, that at two years more breastfed youngsters had gained HIV (36.7% v 20.5%). In any case, mortality was not fundamentally unique in the two groups.⁵⁸ By the by, mortality following two years is probably going to be more noteworthy in the breastfed bunch in view of the higher HIV predominance. Of more prominent concern was the impact of bosom benefiting from the moms' wellbeing, with this associate having a 3.2 occasions higher mortality. Youngsters whose moms passed

on had an eightfold expanded danger of biting the dust themselves.⁵⁹ A subsequent issue is whether the example of bosom taking care of impacts transmission. Restrictive breastfeed taking care of for the initial three months of life might be as sheltered as recipe taking care of and a lot more secure than blended taking care of in forestalling viral transmission,⁶⁰ yet this finding should be affirmed. Thirdly, the advantage of giving perinatal antiretroviral treatment in settings where bosom taking care of is the standard or supported has been addressed. Current proof is clashing. One examination demonstrated no decrease in by and large HIV transmission at 18 months,⁶¹ yet two others found a 42% and 28% decrease in transmission at ages 12 and two years individually regardless of proceeded with bosom feeding.^{62,63} While further research may help with planning strategy about ideal taking care of decisions, it is far-fetched that general accord will be ever be accomplished due to the assortment of settings and circumstances that must be secured and the enthusiastic convictions of the foes.

3. Conclusion

Oral manifestations are common and prevalent in the pediatric HIV infection and have been found to be an early indicator of HIV infection. Because the mouth is easily accessible to clinical management, important verbal signs can be used to aid in the early diagnosis of AIDS in children. This will improve case management, ensuring better health outcomes and improved quality of life for HIV-infected children. HIV-infected child care should include pro Active preventive approach, consistent with the implementation of anticipatory care, guidance with periodic inspections to monitor and treat the symptoms of oral infections and dental diseases.

4. Source of Funding

None.

5. Conflict of Interest

None.

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Author biography

Shaik Ali Hassan Dental Surgeon

Sumit Bhateja HOD

Geetika Arora Reader

Francis Prathyusha BDS,MDS

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