Review Article

ORAL MANIFESTATIONS OF PEDIATRIC AIDS: A REVIEW

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Abstract: Oral manifestations are often among the 1st symptoms of HIV/AIDS and thus can be useful in early detection of the disease. The distribution of some of the specific oral manifestations are reported to differ between adults and children HIV.As the oral manifestations are among the earliest and most important indicators of HIV infection, a better understanding of these manifestations in children is a must for all dental health care workers.

Keywords: HIV; AIDS; Children; Oral; Pediatric; Orofacial.

INTRODUCTION

Oral manifestations are often among the 1st symptoms of HIV/AIDS and thus can be useful in early detection of the disease. The distribution of some of the specific oral manifestations are reported to differ between adults and children.HIV infection was first recognized in children in 1983.[1] Pediatric acquired immunodeficiency syndrome is defined as occurring in children less than 13years of age.[2]

EPIDEMIOLOGY & ETIOLOGY

By 1997, 7629 cases of AIDS in children under the age of 13 years were reported in United States. According to UNICEF approximately 2.1 million children under 15 were living with HIV in 2007.[2] In India, the epidemic is more pronounced in urban areas than rural ones and decreases with increasing education levels.[2] Perinatal transmission not only accounts for 90%of all cases of aids in this age group but also is the cause of virtually all new cases of HIV infection in infants. According to the results of anonymous newborn seroprevalence data, it is estimated that around 7000 infants are born to HIV infected women in the United States each year.[3] AIDS has become the ninth leading cause of death in the United States among children between the age of 1 and 4 years.[4] Mother to child transmission can occur in utero, at delivery and postnatally through breast feeding. In the absence of breast feeding, 40% to 80% of the infected infants born to positive acquire the infection close to or at the time of birth. It is not yet known whether transmission occur through maternal-foetal transfusion via the placenta during the labour or via direct contact of the neonatal skin or mucosal surfaces with maternal blood or secretions.[5] Results of several studies suggest that contact with maternal cervico-vaginal secretions during birth is a risk factor: the first born twin is at two fold higher risk of infection than the second one, rupture of the membrane longer than 4hr is associated with an increased risk of mother to child transmission.[5]

CLASSIFICATION OF ORAL LESIONS

Consensus classification of orofacial lesions associated pediatric HIV infection [6]

GROUP 1: lesions commonly associated with pediatric HIV infection

- Candidiasis
  - Erythematous
  - Pseudo membranous
  - Angular cheilitis
- Herpes simplex virus infection
- Linear gingival erythema
- Parotid enlargement
- Recurrent aphthous ulcers
  - Minor
  - Major
  - Herpetiform

GROUP 2: lesions less commonly associated with pediatric HIV infection

- Bacterial infections of oral tissues
- Periodontal diseases
  - Necrotizing (ulcerative) gingivitis

    - Necrotizing (ulcerative) periodontitis
    - Necrotizing (ulcerative) stomatitis
- Seborrheic dermatitis
- Viral infections
    - Cytomegalovirus
    - Human papilloma virus
    - Molluscum contagiosum
    - Varicella zoster virus
        - Herpes zoster
        - Varicella
- Xerostomia

GROUP 3: lesions strongly associated with HIV infection but rare in children

- Neoplasm
- Kaposi's sarcoma and non-Hodgkin's lymphoma
    - Oral hairy leukoplakia
    - Tuberculosis related ulcers

DIAGNOSTIC EVALUATION OF HIV EXPOSED INFANT

All infants born to HIV infected women should be evaluated on a regular basis until a definitive determination is made regarding their HIV status.[4] Maternal antibody to HIV is passively transferred to the neonate in virtually all children born to seropositive women; however only about one third of these infants are infected.[3] The preferred method for diagnosing HIV infection in infants is by HIV culture or PCR testing.[4]

Viral culture is performed on peripheral blood mononuclear cells that are co-cultured with uninfected mononuclear cells to promote HIV growth and detect latent HIV infected cells by stimulating viral replication. The HIV DNA polymerase chain reaction assay facilitates the detection of minute amounts of HIV proviral DNA that have become incorporated into the DNA of infected cells. In children and infants older than 18 months definitive diagnosis of HIV infection is made by means of the EIA and confirmatory Western blot assays.[4]

PRESENTATION AND PROGNOSIS IN INFANTS AND CHILDREN

There are two general patterns of presentation of HIV infection in children. The first pattern representing about one third of all perinatally acquired infections is a fulminant **c**ourse of illness represented by early onset of severe disease with rapid progression and poor prognosis. Rapid progressors are infants with early onset of disease manifestations who die by the age of 4years. Infants in this group usually have severe opportunistic infections, encephalopathy or both within the first 2years of life. Many of these children become identified as being infected with HIV because of severe illness that arises abruptly.[4]

The second pattern of pediatric HIV infection involves later onset of disease symptoms and is associated with a better prognosis. These children generally are seen after the first year of life with a more indolent disease course, consisting of a variety of the more general clinical manifestations. These children more often have a diagnosis of lymphoid interstitial pneumonitis and manifest other signs of lymph proliferation such as generalized lymphadenopathy and parotitis.[4]

Two major clinical factors that appear to affect the prognosis in children with HIV infection are the specific HIV related disease that they develop and their age at presentation of disease. Scott et al studied 172 perinatally infected children and found a median survival from diagnosis of: [4]

- 1 month for those with Pneumocystis carini pneumonia
- 5 months for those with nephropathy
- 11 months for those with encephalopathy
- 12 months for those with Candida esophagitis
- 50 months for those with recurrent bacterial infection
- 72 months for those with lymphoid interstitial pneumonitis

CLINICAL MANIFESTATIONS

HIV infection in children has a clinical course that is similar but not identical to that in

adults.[3] HIV infection in infants and children is a chronic disease with multiorgan system involvement. HIV disease appears in infants and children with a broad spectrum of manifestations, some of which are unique to children. Most of the symptomatic clinical manifestations of pediatric HIV disease are related to either the direct cytopathic effect of HIV infection or the consequences of immunosuppression. Clinical symptoms vary widely and range from common nonspecific findings to severe manifestations of common childhood illness, AIDS defining conditions or end organ dysfunction.[4]

Common clinical findings in children with HIV that are not AIDS defining include lymphadenopathy, hepatomegaly, splenomegaly, parotitis, recurrent diarrhoea, failure to thrive and recurrent fevers and it is important to evaluate children for specific infectious etiologic factors for these conditions. Common oropharyngeal signs include persistent candidiasis, severe painful gingivitis, HIV specific periodontal disease, recurrent aphthous stomatitis and recurrent herpetic gingivo-stomatitis. Some of these conditions are extremely common in children like lymph proliferation manifesting as lymphadenopathy/ may be the first objective sign of disease.[4]

Children appear susceptible to most if not all of the opportunistic infections seen in adults with AIDS, although they are often a late complication.[3]Advanced HIV disease in children is usually a multisystem disease marked by frequent infections, multiple hospitalizations for acute complications and many stressful symptoms.[4]

IMMUNOLOGIC CHARACTERISTICS

Infants are infected with HIV at a time during which their immune system is developing, and there may be considerable difficulty in interpreting immunologic abnormalities. Infected infants and children have a profound abnormality in antibody-mediated immunity. Hypergammaglobulinemia is a common finding in infected children, occurring in up to 93% of symptomatic children, before a decrease in helper T cells. Reduced CD4numbers are late finding in children and there are profound alterations in T-cell assays.[3]

ORAL MANIFESTATIONS

A number of oral lesions have also been associated with HIV seropositivity in children but the incidence progression and prognostic implications are not yet well understood.[4] Oral lesions strongly associated with HIV infection in adults but less common in children include Kaposi's sarcoma, non-Hodgkin lymphoma and oral hairy leukoplakia.[7]

BACTERIAL INFECTIONS

Bacterial infections have been noted at many sites in HIV infected children and are often recurrent.[5] Several children HIV associated gingivitis associated with both the primary and permanent dentition. The lesion is characterized by a linear erythema of the facial and interproximal gingival margins and is unresponsive to improved oral hygiene. Punctate diffuse erythema may involve gingival and mucosa. In children particularly in the primary dentition, it may be localized or generalized. In adolescents the more generalized form seems to occur, comparable to the lesion seen in adult patients.[3] Other common infections include cellulitis and abscesses caused by Staphylococcus and Streptococcus most frequently identified in children with HIV disease and is often implicated in pneumonia and bacteremia.[4] In developed countries acute necrotizing ulcerative gingivitis has seldom if ever been reported in children under 10years of age.[3]

FUNGAL INFECTIONS

Candidiasis is the most common oral infection occurring in children with HIV with a reported prevalence of 20% to 72%.[4] Oral candidiasis is not uncommon in healthy infants and is seen relatively frequently in children born to intravenous drug abusing mothers who are uninfected with HIV.[3] Erythematous candidiasis is seen most commonly on the tongue and palate with inconspicuous

erythematous changes.[4] Pseudomembranous candidiasis is characterized by the presence of creamy plaques on any part of the oral mucosa but most frequently affects the palatal, buccal and labial mucosa and dorsum of the tongue. The mucosa may appear bright red where visible.[3] Candidal esophagitis may be seen with or without oral candidiasis and is usually manifested by dysphagia, odynophagia substernal pain, and fever is often associated with decreased oral intake and weight loss.[4]

VIRAL INFECTIONS

Children living at lower socio-economic situations are at higher risk of getting HSV-1.Recurrent episodes of severe ulcerative herpetic lesions develop in 5% to 10%.[4] This causes both oral lesions and systemic manifestations. Illness is acute with varying degrees of fever and malaise, cervical lymphadenopathy and perioral and intraoral lesions. The lesions appear as crater like ulcers with well defined raised white borders and have a gray white pseudomembrane.[3]HSV-1 can also cause esophagitis with pain on swallowing, encephalitis and widely disseminated disease in the liver, spleen, adrenal glands, lungs, kidney and brain.[4] Herpes zoster another herpes virus and can produce oral ulcerations usually accompanied by characteristic skin lesions. If virus involves the second and third divisions of the trigeminal nerves, oral lesions will be seen.[3]

ENCEPHALOPATHY

Many children with HIV/AIDS have neurologic involvement. The percentage of children being reported with progressive encephalopathy was high because the children being observed had advanced HIV disease. Children can manifest either static or progressive encephalopathy which may include inability to achieve developmental milestones, impaired brain growth, weakness with bilateral pyramidal tract signs, ataxia and seizures and coma.[4]

NEOPLASTIC DISORDERS

Malignant neoplasms occur less frequently in HIV infected children than in infected adults. The most common malignant lesions described are non-Hodgkin's lymphoma, Burkitt's lymphoma and smooth muscle tumors [4]

UNKNOWN ETIOLOGY

A number of oral manifestations of unknown etiology have been reported in persons with HIV infection, and the most common of these is salivary gland enlargement. Parotid swelling appears to be much more common in children than in adults. Approximately 14% to 30% of infected children are reported to have unilateral or bilateral involvement of the parotid glands.[3] Linear gingival erythema is more commonly seen in children over 12 years of age.[8] Daniel H. Fine et al (2003) reported that HIV positive participants have more caries in their primary teeth but fewer caries in their permanent teeth and that this difference in pattern is most likely due to the slower eruption pattern with respect to permanent teeth in case of the HIV positive participants.[9]

CONCLUSION: As the oral manifestations are among the earliest and most important indicators of HIV infection, a better understanding of these manifestations in children is a must for all dental health care workers.

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REFERENCES

1. Charles RM. Oral manifestations in HIV/AIDS infected children. Eur J Dent 2011;5(3):291-297.
2. HIV/AIDS. www.unicef.in/story/1123/HIV-AIDS
3. Leggott PL.Oral manifestations of HIV infection in children. Oral Surg Oral Med Oral Pathol 1992; 73:187-192.

4. Ungvarski PJ, Flaskerud JH. HIV/AIDS: A guide to primary care management. Saunders; 4 edition (January 15, 1999).
5. Glick M.Oral manifestations associated with HIV-related disease as markers for immune suppression and AIDS. J Oral Pathol Med 1994; 77:344-349.
6. Patton L.L. Prevalence and classification of HIV associated oral lesions. Oral Dis 2002; 8(2):98-109.
7. Coogan MM, Greenspan J, Challacombe SJ. Oral lesions in infection with human immunodeficiency virus. Bulletin of the World Health Organization 2005; 83(9):700-706.
8. Soares L.F. Pediatric HIV-related oral manifestations-a five year retrospective study. Braz Oral Res 2004; 18(1).
9. Fine DH, Tofsky N, Nelson EM, Schoen D. Clinical implications of the oral manifestations of HIV infection in children. Dent Clin North Am 2003; 47:159-174.

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How to cite this article: Garg K, Singh G, Mehrotra V, Raju SM, Singh R. Oral Manifestations of Pediatric AIDS: A Review. Rama Univ J Dent Sci 2015 Sept.;2(3):35-39.

Sources of support: Nil **Conflict of Interest**: None declared