Dental Management of Pediatric HIV Patients

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Objectives

• Understand disease pattern differences in pediatric and adult HIV infection
• Know how to recognize oral manifestations commonly associated with pediatric HIV infection
• Know how to manage these oral conditions
• Understand why oral and dental care are important for children with HIV infection
Importance of Oral Lesions in HIV Infection

- Can indicate HIV infection
- Are early clinical features of HIV infection
- Can predict progression of HIV disease
- Can be used as entry or end-points in therapy and vaccine trials
- Can be determinants of opportunistic infection and anti-HIV therapy used in staging and classification systems

M. M. Coogan,
Bulletin of the World Health Organization, 2005
Disease Pattern Differences in HIV Infection

• Compared to adults, children:
  – Have narrower spectrum of infectious diseases
  – Are more vulnerable to recurrent bacterial infections
  – Are more susceptible to central nervous system disorders
  – Have increased risk for HIV-lymphoproliferation
  – Have decreased risk for malignancies
  – Have increased risk for endocrine and metabolic disorders that affect growth and development
  – Are at increased risk for behavioral and emotional problems due to chronic illness

Diagnosis of Pediatric HIV Oral Lesions

• Clinical examination is important because history is often unknown or incomplete
• Rely on noninvasive procedures for initial diagnosis and treatment
• Treatment often requires modification and individual customization
• Successful management necessitates caregiver involvement and understanding
• Diagnosis should be re-evaluated, if treatment is not effective

Oral Manifestations of Pediatric HIV Infection

- Most children will have at least one oral lesion
- Infectious diseases: bacterial, viral and fungal
- Most neoplasms are EBV driven: lymphoma, leiomyoma and leiomyosarcoma
- Immunologic disorders: aphthous ulcers, parotitis, lymphadenopathy, thrombocytopenia and allergic reactions
- Iatrogenic diseases are caused by drug side effects
- Dental diseases: Gingivitis and periodontal diseases, dental caries, enamel hypoplasia, over-retained teeth, delayed eruption of teeth
Common Oral Manifestations of Pediatric HIV

- Oropharyngeal Candidiasis (OPC)
- Salivary gland enlargement
- Herpes simplex viral infection
- Recurrent apthous stomatitis
- Cervical lymphadenopathy
- Periodontal diseases
- Dental caries
- Other dental conditions
  - Over-retained primary teeth
  - Delayed tooth eruption
  - Enamel hypoplasia
Oral Candidiasis in Children

- Common opportunistic fungal infection, affecting up to 72% of HIV infected children
- Cause: *Candida species*, usually *Candida albicans*
- Contributing factors: Immune suppression, xerostomia medications, oral appliances, poor oral hygiene
Oral Candidiasis in Children

- **Forms:** Pseudomembranous, erythematous & hyperplastic candidiasis, angular cheilitis, median rhomboid glossitis, cheilocandiasis
- **Site:** Lips and oropharyngeal mucosa
- **Signs & Symptoms:** Red or white patches, erosions, burning sensation, sore throat, taste alterations
- **Diagnosis:** Clinical findings, culture, cytology, biopsy
Oral Candidiasis in Children

![Oral Candidiasis in Children](image-url)
Rx: Oropharyngeal Candidiasis

- Nystatin susp: 100,000-500,000 U 4 times daily for 14-21 days
- Clotrimazole susp, troche: 10 mg 4-5 times daily for 14-21 days
- Fluconazole susp, tab: 3-6 mg/kg daily for 14-21 days
- Ketoconazole susp, tab: 5-10 mg/kg in 1 or 2 doses for 14-21 days
- Itraconazole susp: 2-5 mg/kg daily for 14-21 days
- Amphotericin IV: 0.5-1.0 mg/kg/d
- Antifungal ointment or cream for lips, if needed
Parotitis in Children

- Lymphocyte-mediated salivary gland disease observed in about 30% of children
- Indicator of slower HIV disease progression
- Cause: CD8+ infiltrate; HIV, EBV; genetic predisposition
- Median age of onset: 5.4 years
Parotitis in Children

• Site: Parotid and submandibular glands; may affect lungs and other organs
• Signs & Symptoms: Diffuse facial swelling, may be tender, xerostomia, cervical lymphadenopathy, enlarged palatine tonsils
• Diagnosis: Clinical findings, advanced imaging, aspiration or labial lip biopsy
• Complication: Bacterial sialadenitis, lymphoma
Parotitis in Children
Treatment of Parotitis

- Caries and gingivitis prevention: Topical fluorides, clorhexidine gluconate oral rinse
- Pain management: Nonsteroidal anti-inflammatory drugs (NSAIDS)
  - Ibuprofen: 5-10 mg/kg q 4-6 h (max = 40 mg/kg/d)
  - Naproxen: 5-10 mg/kg q 8 h (max = 1500 mg/d)
- Saliva stimulants: Pilocarpine, cevimeline hydrochloride
- Severe facial swelling: Prednisone; surgery, if large cystic lesions are present
- Bacterial sialadenitis: Antibiotics - clindamycin
Herpes Simplex Infection in Children

- Common viral infection
  - up to 24% of children affected

- Transmission
  - Direct contact, asymptomatic viral shedding in genital fluids and saliva

- Median age of onset: 5 years

- Site: Orofacial, nasal and esophageal region

- Signs & Symptoms
  - Painful gingivitis, recurrent persistent ulcers intraorally; vesicles and crusted ulcers on lips and skin

- Non-nutritive sucking habits increase risk for ocular and digital infection

- Diagnosis
  - Clinical, culture, PCR, cytology, biopsy
Herpes Simplex Infection in Children
Treatment of HSV Infection

- Systemic Antiviral Medications
  - Zovirax, generic (acyclovir): 15 mg/kg, 5 times/day
  - Famvir (famciclovir): Not approved for pediatric use
  - Valtrex (valacyclovir): Not approved for pediatric use
  - Foscavir (foscarin), if resistant (6.4% HIV) - IV

- Topical Antiviral Agents: Not usually recommended
  - Denavir (penciclovir) 1% cream
  - Zovirax (acyclovir) 5% ointment
  - Abreva (docosanol) 10% cream (OTC)
Aphthous Stomatitis in Children

- Pediatric prevalence: Up to 16%; common oral lesion
- Cause: Localized immune dysfunction
- Predisposing factors: Trauma, hematologic disorders, nutritional deficiencies, allergies, oral appliances
- Variants: Minor, major and herpetiform
- Site: Primarily affects nonkeratinized oropharyngeal mucosa, esophagus
- S/S: Painful recurrent ulcers, multifocal pattern, increase in the major variant, may result in scarring
- Diagnosis: Clinical; culture and biopsy, if persistent
Aphthous Stomatitis in Children
Treatment of Aphthous Ulcers

• Pain management: Topical anesthetics and coating agents, systemic analgesics

• Ulcer management:
  ▪ Kenalog (triamcinolone) in Orabase 0.1%
  ▪ Fluocinonide gel or ointment 0.05%
  ▪ Clobetasol gel or ointment 0.05%
  ▪ Dexamethasone elixir 0.5 mg/5 mL
  ▪ Beclomethasone dipropionate: 1-2 puffs/3X/d
  ▪ Prednisone (2mg/kg/d or 20 - 60 mg): 5-7 d
  ▪ Thalidomide (50 - 200 mg/d)
Lymphadenopathy in Children

- **Prevalence:** Cervical lymphadenopathy > 50%
- **Cause:** HIV and EBV lymphoid replication
- **Site:** Generalized; submandibular, cervical and pharyngeal tonsils
- **S/S:** Bilateral, persistent, diffuse enlargement; nontender; no erythema of the skin; ≥ 0.5 cm at more than one site
- **Significance:** Positive predictor of HIV survival
- **Mimics:** Viral, bacterial infection, lymphoma
- **Treatment:** None required; aspiration biopsy and advanced imaging with significant enlargement
Lymphadenopathy in Children
Periodontal Diseases in Children

Disease Classification and Prevalence

- Linear gingival erythema (LGE): 0 - 38%
- Necrotizing ulcerative gingivitis (NUG): 0 - 5%
- Necrotizing ulcerative periodontitis (NUP): 0 - 5% (most common oral lesion in Africa)
- Necrotizing stomatitis (NS): Unknown
- Conventional gingivitis: 50 - 97%
- Periodontitis modified by systemic disease: Unknown
Linear Gingival Erythema in Children

- Pediatric prevalence: Up to 38%; common oral lesion
- Cause: Unknown but *Candida* sp, especially *C. albicans*, *C. dublinienesis* has been implicated
- Site: Usually multiple teeth but may be localized
- Signs & Symptoms: Fiery red band 2-3 mm wide on marginal gingiva; petechiae or diffuse erythema on adjacent mucosa; bleeding is uncommon; pain is rare
- Note: Erythema is disproportional to amount of plaque
- Diagnosis: Clinical; nonresponsive to oral hygiene
- TX: Plaque and caries control; antifungal medications
Linear Gingival Erythema in Children
Necrotizing Ulcerative Gingivitis

- Pediatric prevalence: 0 - 5%; uncommon oral lesion
- Cause: Fusiform-spirochete bacteria; Gram-negative
- Predisposing factors: Stress, immune suppression, smoking, malnutrition, pre-existing gingivitis
- Age: Adolescents in US; young children in developing countries, especially Africa
- Site: Anterior gingiva to widespread
- Signs & Symptoms: Punched out, ulcerated papillae, bleeding, pain, lymphadenopathy, fetid odor, fever
- Diagnosis: Clinical, biopsy of persistent lesions
Necrotizing Ulcerative Gingivitis
Necrotizing Ulcerative Periodontitis

- Pediatric prevalence: 0 - 5%; uncommon oral lesion
- Cause: Fusiform-spirochete bacteria; Gram-negative
- Predisposing factors: Immune suppression, smoking, malnutrition, stress, pre-existing periodontitis
- Age: Usually adolescents
- Site: Lower anterior gingiva to widespread
- S/S: Features of NUG, rapid bone loss, necrosis and sequestration, tooth loss
- Diagnosis: Clinical and radiographic, biopsy, if persistent lesions
Necrotizing Ulcerative Periodontitis
Conventional Gingivitis in Children

- Conventional gingivitis mimics LGE
- Decreased gingival health is associated with advanced HIV disease and decreased CD4 percentages
- Higher plaque and gingival indices associated with candidiasis
- Leukopenia and anemia mask the clinical signs of erythema
Caries Risk in the Pediatric HIV Population?

- Increased caries susceptibility
  - High carbohydrate diet supplementation
    - Effects on salivary pH
    - Frequent intake of sugar containing medications
    - Effects on salivary function and oral flora
  - Compromised immunological status
    - Increased mutans streptococci and lactobacilli levels
    - Increased systemic risk in face of infection
- Compliance is poor among HIV infected children with unmet dental needs
Risk Factors for Dental Caries in Children with HIV Infection

- High lactobacilli and mutans streptococci burdens
- Increased plaque indices
- High carbohydrate dietary supplements
- Frequent intake of juices, milk and other sweetened beverages to prevent dehydration
- Cariogenic effects of oral medications
- Decreased salivary flow associated with medications
- Oral dysfunction/developmental delay/failure to thrive
  - Poor clearance of foods/medications
Dental Caries Prevention in Children with HIV Infection

- Frequent diagnostic visits
- Aggressive use of fluorides
  - Systemic, if necessary (as per CDC guidelines)
  - Topical
    - High potency, operator applied
    - High potency, daily use
    - Low potency rinses
    - Fluoride varnishes
- Promote prevention
- Control measures
  - Chlorhexidine rinses
  - Education of caretakers
- Pit and Fissure Sealants
Dental Caries Management in Children with HIV Infection

- Aggressive use of preventive and minimally invasive restorative strategies
  - Dictated by the age of the patient, extent of the caries, and previous history of caries
  - Preventive resin restorations
  - Adherence to pulpal therapy guidelines
    - Aggressive treatment of non-vital primary teeth
      - Restrictive criteria for assessing pulpal vitality
  - Well contoured restorations
  - Appropriate use of prophylactic antibiotics
  - Platelet supplementation
Other Dental Conditions in Children with HIV Infection

- Delayed tooth eruption
  - Primary and permanent dentition (Valdez, 1994; Tofsky, et al 1999; Ramos-Gomez et al, 2000)
- Over-retained primary teeth (Flaitz, 2001)
- Enamel hypoplasia
Miscellaneous Treatment Considerations in the Oral Health Management of Children with HIV Infection

- Nitrous Oxide
  - Evaluate pulmonary function and ability to breathe through the nose

- Conscious Sedation
  - Evaluate size of tonsils and pulmonary function
  - Potential for drug interaction with HIV medications and midazolam and meperidine

- General Anesthesia
  - Consult with pediatrician and anesthesiologist
Hematologic Guidelines for Dental Management of Patients with HIV Infection

• Prevention of Hemorrhage

- Emergency Dental Procedures for the control of pain, infection or biopsy procedure in order to establish a diagnosis
  - Platelet count > 50,000/mm³
    ➢ no special precautions are necessary
  - Platelet count < 50,000/mm³
    ➢ consider platelet replacement
  - Anemia - Hemoglobin < 8 gm/dl
    ➢ consider transfusion

Painful and infected primary incisors
Miscellaneous Treatment Considerations in the Oral Health Management of Children with HIV Infection

- Life Expectancy
  - Duration of treatment
  - Prognosis of treatment

- Psychosocial
  - Image enhancement
  - Normalcy
  - Discontinuation of elective or image enhancing procedures
Miscellaneous Treatment Considerations in the Oral Health Management of Children with HIV Infection

- **Orthodontics**
  - Chlorhexidine rinses
  - Fluoride supplementation
  - Fastidious Oral Hygiene
  - Meticulous care of retainers and appliances

- **Endodontics**
  - No contraindication with appropriate diagnosis
Oral Hygiene Considerations in the Management of Children with HIV Infection

- Hematologic Considerations
  - Daily tooth brushing, deplaquing of the tongue and flossing when ANC > 500/mm³ and platelet count > 20,000/mm³
  - Dental hygiene efforts with moist gauze or toothette only when ANC < 500/mm³ or platelet count < 20,000/mm³

- Chlorhexidine Rinses
  - Potential adjunct in the management of Conventional Gingivitis (CG)
  - Effective adjunct for necrotizing periodontal diseases
  - May be beneficial for decreasing halitosis
Considerations in the Dental Management of Children with HIV Infection: Key Points

- Oral health matters as life expectancies of children with HIV infection are rising
- Children with HIV infection are at greater risk for oral and dental diseases
- Consultation with the medical community is required in order to assess risk/benefit associated with treatment
- Aggressive dental management is indicated in an effort to prevent or manage oral and dental disease
References

  
  _Date:_ 06/2002  
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Questions please…

Thank you!