

Dental Clinical Practice 4 Semester 2  
**The Medically Compromised Child : Part II**

Paediatric Dentistry

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## Bleeding disorders

- Defects in primary haemostasis result in bleeding from the skin or mucosal surfaces with petechiae and purpura. The defects include thrombocytopaenia and defect in platelet function
- Defect in secondary haemostasis such as in haemophilia lead to bleeding in muscles and joints

# Platelet disorders

- **Thrombocytopenia:** Platelet count low as a result of marrow suppression by drugs or other diseases
- **Platelet-function disorders:** Acquired decreased platelet function as in the use of NSAID
- **Dental implication:** Both the above conditions will result in failure of initial clot formation
- **Dental management:** It is preferable to have platelet levels  $>50 \times 10^6/l$  before extraction

# Coagulopathies

- Results in decreased in the amount of particular factor in the coagulation cascade
- Common of them are haemophilia A (deficiency of factor VIII), haemophilia B (deficiency of factor IX), and von willebrand's disease (abnormality of factor VIII molecule complex)
- Other disorders include vit K deficiency and liver disease

## Dental management

- Extraction and periodontal therapy requires factor replacement with consultation with haematologist
- Endodontic therapy can be safely carried out without factor replacement
- Use rubber dam to protect soft tissues



# Anaemia (Red-cell disorders)

## 1. **Glucose 6-phosphate dehydrogenase deficiency:**

It is a Inborn error of metabolism resulting in haemolytic anaemia when the child is exposed to drugs such as sulphonamides, chloramphenicol, aspirin and prilocaine

## 2. **Thalassaemia:** One of the globin chain of

the haemoglobin complex is absent or reduced. Children are managed with regular blood transfusions and iron-chelating agents. Avoid dental treatment if haemoglobin <100g/l

## White Blood cell disorders- Leukaemia

- Leukaemia is a malignant proliferation of WBC and dissemination of these cells into the peripheral blood, accumulate in other tissues and organs
- Categorized as acute or chronic
  - Acute lymphoblastic leukaemia (ALL) : is the most common in children
  - Acute myeloid leukaemia (AML)
  - Chronic myeloid leukaemia (CML)

# Oral Complications

- Erosive or ulcerative lesions are common
- Oral infection
- Candidiasis is common
- Gingival bleeding greatly increased
- Gingival hypertrophy -- direct invasion of tissue by an infiltrate of leukemic cells
- Spontaneous dental abscess formation
  - Infiltration of leukemic cells along vascular channels  
→ strangulation of pulpal tissue
- Loss of teeth: necrosis of the PDL



# Dental Management

- No active dental treatment should be carried out until the child is in **remission**( remove abnormal cells from the blood and bone marrow)
- Dental pain treated conservatively by the use of antibiotics and analgesics
- Swabbing the mouth with chlorhexidine mouthwash and use of antifungal agents are essential
- LA preparations at mealtime can be of help

## Once leukaemia is in **remission** dental treatment done with the following adjustment

- Haematological information required for invasive procedures
- Prophylactic antibiotic to prevent postoperative infection
- Children who are immunosuppressed need active antifungal treatment
- Long-term preventive dental care is important

# Immunodeficiency

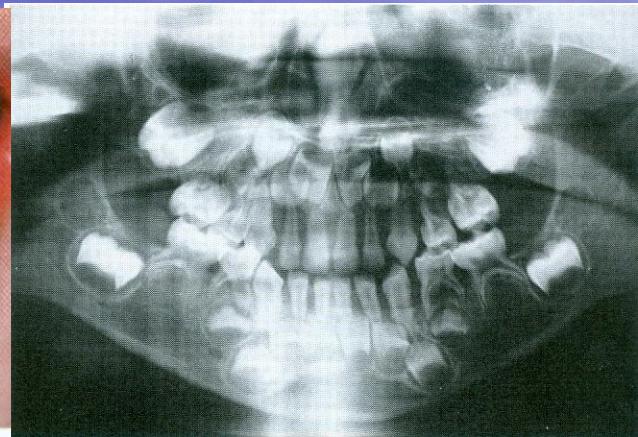
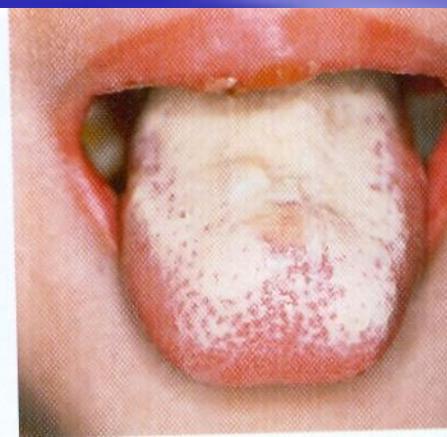
- Quantitative or qualitative defects in neutrophils, primary immunodeficiencies involving T cells, B cells, complement
- Prevention is the key for management
- Antibiotics should be used to prevent infection

# **Types of Immunodeficiency**

- **Qualitative defects in neutrophils**
  - Leukocyte adhesion defect
  - Chediak-Higashi syndrome
- **Quantitative defects in neutrophils**
  - Neutropenia
  - Cyclic neutropenia
- **Phagocytic disorders**
  - Agammaglobulinaemia
- **Defect in microbial killing**
  - Chronic granulomatous disease
- **Primary immunodeficiencies**
  - Involving T cells, B cells, complement or combined defects and acquired disorders (e.g. HIV, chemotherapy and radiotherapy)

## Dental implications

- Neutrophil deficiencies and T cell defect
- Candidosis
- Severe gingivitis/prepubertal periodontitis
- Gingivostomatitis
- Recurrent aphthous ulceration
- Recurrent herpes simplex infection
- Premature exfoliation of primary teeth

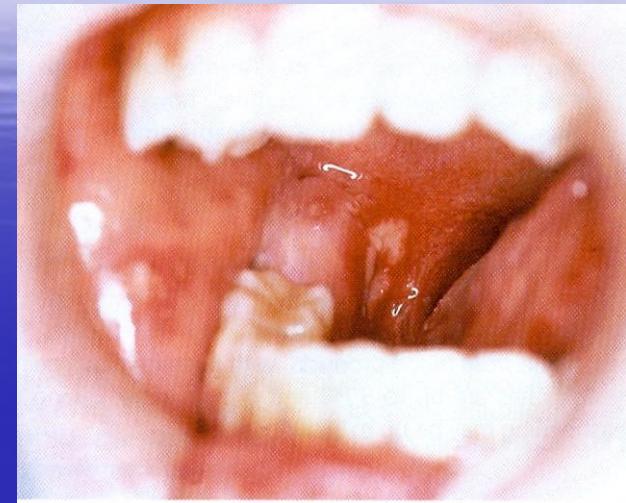


# Dental Management

- Prevention and regular review
- Prophylactic antibiotic therapy
- Extraction of pulpal involved teeth
- Acyclovir for recurrent HSV
- Antifungals
- Chlorhexidine 0.2% mouthwashes

# HIV infections and AIDS

- Herpes simplex
- Aphthous-type ulcers
- Salivary gland enlargement
- Hairy leukoplakia
- Oral candidosis
- HIV gingivitis and periodontitis



# Organ transplant

- Transplantation of Kidney, heart, bone marrow, liver and pancreas transplant are now routine procedures
- These children are given immune suppressive treatment to prevent graft-versus-host rejection. Drugs such as corticosteroids, ciclosporin A are given
- Gingival overgrowth is seen in children treated with ciclosporin and nifedipine.

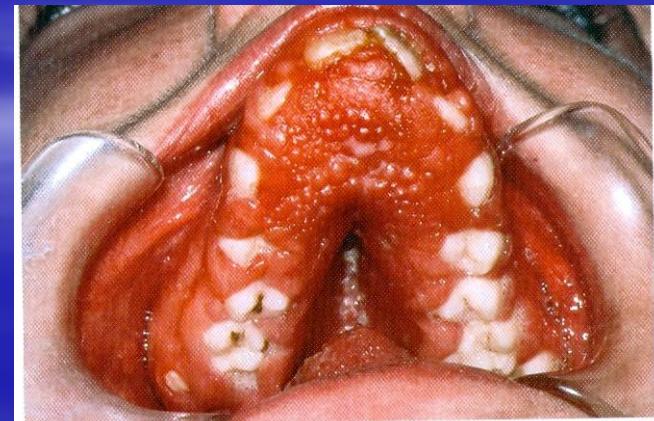
# Dental management

- Eliminate infection
- Tooth with large caries extracted
- Primary tooth soon to exfoliate should be extracted
- Meticulous oral hygiene
- Gingivectomy if required
- Antibiotic prophylaxis for invasive treatment

# Neurological disease

## Epilepsy :

- Febrile convulsions: In children under 5 years seizure in response to febrile illness.
- Grand mal or petit mal are the types
- Major problem is gingival enlargement
- Management: Oral hygiene, gingivectomy if needed



## Cerebral palsy:

- Cognitive ability of a child with cerebral palsy should be determined. Many patients have no intellectual impairment
- Reflex limb extension patterns may be triggered when the limbs are in extension or when the head is unsupported. So transfer of the child to the dental chair should be done with care:
  1. rise the chair, 2. stabilize the head to the midline, 3. bring the arms forward, 4. reassure the child.
- Gag, cough, bit and swallowing reflexes may be impaired or abnormal
- Mouth props may be used but these kids are at risk for aspiration

# Other children with special needs

- Attention deficit hyperactive disorder
- Visual impairment
- Hearing impairment

# Visual impairment

- Allow the child to make full use of tactile sense and sense of smell
- Offer verbal and physical reassurance
- Paint a picture in the mind of the patient by describing the treatment
- Startle reflex may occur if patients are not warned of different instruments before used
- Use safety glasses as they are light sensitive

# Hearing impairment

- If the child can lip read face the child and speak clearly and slowly
- It is useful to learn basic sign language
- Maintain visual contact
- Deaf children are sensitive to vibration so introduce high speed hand drills with care
- Hearing aid volume need to be adjusted

# Syndromes with craniofacial anomalies

- Downs syndrome
- Ectodermal Dysplasia
- Cleidocranial Dysplasia
- Williams Syndrome
- Fragile X syndrome
- Dentinogenesis imperfecta
- Amelogenesis imperfecta
- Treacher Collins syndrome

# Down Syndrome

- Inheritance pattern : Sporadic, Trisomy 21
- General manifestation: Mental deficiency, hypotonia, cardiac anomaly in 40%, dry skin
- Dental manifestation: Brachycephaly, small ears, microdontia, decreased risk for dental caries and increased periodontal disease.

# Treatment consideration:

- Determine the need for endocarditis prophylaxis
- Childs ability to cooperate
- Since the child is susceptible to periodontal disease emphasis should be put on
  1. daily tooth brushing
  2. fluoride tooth paste 500ppm
  3. 0.12% chlorhexidine mouth wash in older children

# Cleidocranial Dysplasia

- Inheritance pattern: Autosomal dominant or new mutation
- General manifestation: Short stature, normal intelligence, partial or complete absence of clavicles
- Dental manifestation: Frontal bossing, brachycephaly, late closure of fontanelles, hypertelorism, delayed eruption, supernumerary teeth and impacted teeth

# Dental treatment consideration

- Challenging and multidisciplinary
- Delayed eruption of the permanent teeth will be the first sign that indicates something is abnormal in the child's development

# Fragile X syndrome

- Inheritance: X-linked
- General manifestation: Mental retardation, autism in 60%
- Treatment Consideration:
  1. Childs behavior should be managed
  2. Oral health should be the responsibility of the care provider
  3. Hence care provider should receive instruction on how to maintain good hygiene and healthy dietary practices

# Treacher collins syndrome

- Inheritance: Autosomal dominant or sporadic
- General manifestation: Normal intelligence, conductive deafness, occasional congenital heart defects.
- Dental manifestation: Down slanting palpebral fissures, malar hypoplasia, mandibular hypoplasia, malformation of the external ear and cleft palate.
- Treatment Consideration: micrognathia may make intubation difficult if treated under GA. Patients with heart defects need consultation

# References

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