ORAL DISTURBANCES ASSOCIATED WITH SYSTEMIC DISEASES IN CHILDREN

Ban .T. Shareef
Dept. Oral pathology and Medicine, School of Dental Sciences
Universiti Sains Malaysia
Oral disturbances of systemic disease in children

- **Bacterial**
  - Tuberculosis
  - Scarlet fever
  - Diphtheria
  - Tetanus (Lock jaw)
  - Whooping cough (Pertussis)

- **Viral**
  - Measles (rubeola)
  - Chicken pox (Varicella)
  - Mumps (Epidemic parotitis)
  - Glandular fever
  - Hand foot mouth disease
  - HIV infection and AIDS

- **Fungal**
  - Systemic mycosis

- **Skin disease**
  - Erythema multiforme
  - Hereditary Epidermolysis Bullosa

- **Hematologic Disorders**
  - Iron deficiency anaemia
  - Thalassemias

- **Metabolic disease**
  - Diabetes

- **GIT disease**
  - Crohn’s disease

- **Autoimmune diseases**
  - Behcet’s syndrome
  - Systemic lupus erythematosus

- **Genetic disorders**
  - Down syndrome
  - Neurofibromatosis
  - Papillon- Lefevre syndrome
  - Chediak –Higashi disease
Tuberculosis

- Chronic granulomatous infectious disease.
- The initial infection is generally acquired by inhalation of the *mycobacterium Tuberculosis* as aerosol.
- Relatively frequent in children & rising worldwide.

Clinical feature:
- The bacilli primarily infect the lungs
- The mouth is secondarily infected.
  - Oral manifestation:
    - Tongue lip, palate, tonsils are most frequently affected.
    - Typical lesion is vegetating, usually painless & irregular.
    - Submandibular & cervical lymphadenopathy are frequently infected (Scrofula).
- Treatment: Antituberculous multiple drug regimens.
Scarlet fever (Scarlatina)

-Occurs predominantly in children during winter months.

-Etiology: Group A β-haemolytic streptococcus that elaborate erythrogenic toxin.

-Most common in children under 10 yrs.

-Clinical features:
  - Sever pharyngitis, tonsillitis, headache chills, fever and vomiting.
  - Enlargement of cervical and regional lymphnode.
  - A bright scarlet skin rash, more prominent on skin folds.
- Oral manifestations:
  - Mucosa of the palate may appear congested, throat often fiery red.
  - Tonsils & faucial pillars are usually swollen, sometime covered with a grayish exudates.
  - Coated “white strawberry” tongue.
  - By day 4 or 5, the white coating disappears, revealing the representative raspberry tongue.

- Treatment: symptomatic, antibiotic therapy.
Diphtheria

- Occur in children during the fall and winter.

- Etiology: *Corynebacterioum diptheriae* or *klebs loffler baccillus.*

- Clinical features
  - Listlessness, malaise and fever, occasional vomiting.
  - Oral lesion, A white to gre-green membrane appears on the tonsil soon swell extensively even to produce the “bulk neck” of severe diphtheria.

- Treatment: antitoxin and antibiotic; hospitalization and isolation; vaccination.
Tetanus (Lock jaw)

- It is a nervous system disease.

- Etiology: Exotoxins of anaerobic gram + bacillus (Clostridium tetani).

- Clinical features:
  - Violent, painful and exhausting muscular spasms
  - Orofacial manifestations: First attacks the muscles of the face and jaw, and then spreads to the rest of the body.

- Treatment: Hospitalization, sedation, respiratory support, antimicrobial drugs, active and passive immunization, surgical wound care.
Whooping cough (Pertussis)

• Bacteria – *Bordetella pertussis*.

• Clinical features:
  - Cold and cough; it worsens at night after about 10 days.
  - Congested conjunctivae and slightly swollen face.

  **Oral lesions:** may have ulcers under the tongue from friction with the teeth while coughing.

• Treatment: symptomatic.
Measles (rubeola)

- Common infectious disease.
- Etiology: Measles virus (a member of Paramyxoviridae).
- Clinical features:
  - Mild fever accompanies the early symptoms, resembling an upper respiratory infection,
  - Mucola-papular on the face and neck.
-Oral lesions:

- Oral lesions Frequently occur 2-3 days before cutaneous lesion.
- Koplik’s spot (irregularly shaped flex which appear blue, white specks surrounded by bright red margin in the buccal mucosa and the inside of the lips, (Pathognomonic of this disease).
- Redness, petechiae and small round ulcerations may also appear.

• Treatment: **symptomatic, preventive vaccination.**
Chicken pox (Varicella)

- Acute viral infection.
- Almost exclusively occur in children.
- Most common in winter and spring.
- Etiology: Varicella-zoster virus (VZV).
- Clinical features:
  - Prodromal symptoms headache, Malaise and fever, followed by skin eruption.
- **Oral lesions:**
  - Bilateral distribution of small vesicles and pustules in the mucosa.
  - Rupture vesiculopustular eruptions into small shallow erosions surrounded by a red halo with a whitish bottom.

- **Treatment:** Symptomatic; acyclovir.
Mumps (Epidemic parotitis)

- Mumps virus (a member of *Paramyxoviridae*).
- Common in children.
- Clinical features:
  - Prodromal symptoms: Headache, chills, vomiting and pain below the ears.
  - Followed by **Orofacial manifestations:**
    - Bilateral or unilateral swelling of parotid glands frequently elevating the ear.
    - The opening of parotid duct erythematous and edematous.
    - Dry mouth with increased pain on chewing and swallowing.
- Treatment: symptomatic; vaccination.
Glandular fever (Infectious mononucleosis)

- Etiology: *Epstein-Barr virus*.
- Common in children.
- Clinical features:
  - Malaise, fever and acute pharyngitis
  - Oral lesions:
    - Constant sign of petechiae on the posterior hard and soft palate.
    - Uvular edema, tonsillar eudate.
- Treatment: no specific treatment required.
Hand, foot & mouth disease

- Caused mainly by Coxakie A-16 virus.
- Highly infectious.
- School children predominantly affected.
- Occasionally spread to parents and teachers.

- Clinical features:
  - It is diagnostic.
  - Mild prodromal symptoms (low grade fever, mailaise, headache).
  - Typically mild vesiculating stomatitis, and or vesiculating rash on the palms of the hands and soles of the feet.
- Treatment No specific treatment is required, only supportive treatment.
Hand, foot & mouth disease

vesicles on the skin and in the mouth, along with a sore throat and fever. The oral vesicles have broken open to form ulcers with erythema.
HIV infection and AIDS

• Transmitted through infected mother.

• Etiology; *Human Immune Deficiency Virus (HIV)*.

• **Oral manifestations:**
  - The most common oral manifestations in children
    1. Candidiasis/thrush; chronic and acute.
    2. Herpes simplex, primary and secondary.
    4. Linear gingival erythema.
Other lesion is less common in children.

1. Atypical ulceration
2. Exfoliative cheilitis.
3. Hairy tongue.

-Rare lesions in children

1. Kaposi sarcoma
2. Hairy leukoplakia
Systemic Mycosis

- Involve many organs and systems.
- Some of systemic mycoses are endemic.
- The oral cavity is common site for infection by some mycoses (aspergillosis, histoplasmosis, mucor rmYcosis).
- Clinical features:
  - Oral involvement is common in immunocompromised and immunosuppressed children.
  - Oral lesion appear as nodules and chronic vegetating ulcers.
  - Yellow and black necrotic ulceration may occur.
  - Nasal & paranasal signs & symptoms are common.

Treatment Amphotericine is the drug of choice.
Erythema multiforme

- Occasionally triggered by herpetic infections or drugs.
- Children & Adolescents, particularly males, mainly affected.
- Clinical features
  - Mild fever and systemic upset may be associated.
  - Skin eruption appear in different forms.
  - The severe form of EM, is Steven Johnson's Syndrome; widespread involvement of the skin, oral, genitalia and ocular mucosae.
- **Oral manifestation:**

  **EM**
  - Lips, frequently grossly swollen, split, crusted.
  - Stomatitis due ulcerations in the mouth.
• **Steven Johonson’s Syndrome**

A 4 year-old boy who was sensitive to **aspirins**. This episode is one of several. With the eye involvement, the target lesion on his face, the crusting lesions on his lips and the white pseudomembranes on his tongue.
• Treatment: In mild cases, supportive care is sufficient, while in severe cases there is a good response to corticosteroids.
Hereditary Epidermolysis Bullosa

• Occur in children.

• Hereditary forms presents in autosomal dominant and recessive forms.

• Hereditary forms are EB Simplex, Junctional EB, Dystrophic EB.

• Exclusively in infants and children.

• Clinical features:
  - Generalized desquamated condition of the skin and oral mucosa.
  - Associated scarring, Disfigurement, contractures and dental defects.
  - Severe oral manifestations can be seen in 2nd and 3rd form.
-Oral lesions

- mucous appears thick, gray, smooth & inelastic.
- Buccal & lingual sulci become obliterated with scarring.
- There is immobility of the lips and microstomia.
- Trauma produces extensive bulla formation and desquamation affecting: hands, feet, esophagus & oral cavity.

- Treatment:
- Pat. may avoid trauma.
- Symptomatic treatment of the lesions.
- Topical or systemic corticosteroids or both.
Iron deficiency anaemia

• Most common cause of anaemia worldwide.
• A deficiency of red blood cells.
• Deficiency in children is usually caused by the inadequate of intake of iron through their diet.
• Young children in particular are often fussy and picky eaters.
• Clinical features:
  - Hair, skin, nail and mucous membrane changes are often visible which can occur before the patient is clinically anaemic.
-Oral manifestation:

- The tongue may become swollen and smooth and develop a burning sensation.
- Dryness of the mouth and throat making it difficult to swallow.
- Iron deficiency may also predispose to bacterial and fungal infections such as candidiasis (thrush, bilateral angular cheilitis).

• Treatment: iron supplement and proper diet.
Thalassemias

- Thalassemias are inherited disorders of Hb.
- Types (alpha, beta, gamma, delta).
- Beta thalassemia is more common.
- Exclusively in children.
- Thalassemia major become symptomatic during first year of life.
- Severe pallor, slight to moderately severe jaundice, and marked hepatosplenomegaly are almost always present.
- Growth retardation is a common finding.
Orofacial manifestations of thalassemia are usually striking:

- Frontal bossing,
- Prominent facial bones,
- Dental malocclusion,
- Oral mucosa is pale and there is loss of tongue papillae & glossodynia.

Treatment:

- Blood transfusion, chelation therapy, hormonal replacement therapy, & general supportive therapy.

Protrusion of upper anterior tooth and malocclusion.
Diabetes mellitus

• Heterogenous group of disorders in carbohydrate, protein, and lipid metabolism.
• It is common in children.

• **Oral manifestation is variable and non specific** seen in poorly controlled diabetes.
  - Gingivitis, periodontitis, increased incidence of caries.
  - Xerostomia.
  - Salivary gland enlargement.
  - Small erosions.
  - Delayed wound healing.
  - Burning mouth syndrome and taste disorder.

• Treatment of oral lesion high standard of oral hygiene and periodontal therapy.
Crohn’s disease

• An inflammation of gastrointestinal tract.

• Etiology is unknown. It has been associated with *Helicobacter* Sp.

• Clinical features
  - GIT Signs and symptoms, abdominal pain, diarrhea, vomiting, rectal bleeding.
  - Weight loss.
  - Arthritis, spondylitis, and uveitis.
- **Oral manifestation:**
  - Diffuse erythematous swelling of the lips and cheeks.
  - Gingival granulomatosi with diffusely swollen gingivae.
  - Linear ulceration or fissuring of the buccal and labial sulcus – “cobblestone”.
  - Erosion of palatal surface due to repeated vomiting.

- Treatment: appropriate diet, corticosteroid, cyclosporine, metronidazole.
Behcet’s syndrome

• Chronic inflammatory multi-systemic disease.

• Etiology unknown; Genetic immunological factors & viral infection.

• Usually develop in children over 15 year old.

• Clinical features:
  - Involvement, oral, eye genitalia, skin.
  - Involvement of GIT, CVS, and joints.
  - Lung and CNS, rarely involved.
- **Oral lesions**: similar to aphthous ulcer.

- Ulcers on any oral mucosal sites.

- **Treatment:**
  - Corticosteroid,
  - Immunosuppressive drugs.
**Systemic lupus erythematosus (SLE)**

- Chronic inflammatory autoimmune disease.
- Etiology: Unknown; genetically determined autoimmune disease.
- Two major forms: discoid & systemic.
- Systemic form is relatively common in children.
- Clinical features:
  - Arthralgia, malar rash—most common.
  - Photosensitivity.
  - Any organ system or serous surface can be affected.
  - Autoantibodies are produced.
-Oral lesions/SLE:
  - lesion usually affect palate, buccal mucosa and gingivae.
  - Localized or extensive painful erosions or ulcers, patechea, edema, hemorrhages.
  - Xerostomia.

- Treatment:
  - Corticosteroid steroids, other immunosuppressive drugs.
Down’s syndrome

• Chromosomal disorders with variable clinical manifestation
• Common congenital disease..
• Clinical features:
  - Mental retardation, hypotonia, hyperextensibility of the joints, congenital heart anomalies.
- **Orofacial manifestations**

  - slanting eye, short ear, flat face with a broad nose bridge.

  - Macroglossia, fissured and geographic tongue, high arch palate, cleft palate, delayed teeth eruption, hypoplastic teeth.

- **Treatment**: Supportive.
Neurofibromatosis

- The most common form is the classic form.
- Inherited as autosomal dominant trait.
- Relatively common in children.
- Clinical features:
  - Skin lesions, multiple neurofibromas and café-au-lait spots.
  - Other abnormalities include CNS tumors, mental deficiency, seizures.
- Oral manifestations
  - multiple nodular neurofibromas vary in size.
  - Mostly affect tongue.
  - Enlargement of fungiform papillae common.
  - Macroglossia uncommon.

- Treatment: supportive.
Papillon- Lefevre syndrome

- Inherited as autosomal-recessive condition.
- Rare genetic disease.
- Periodontal lesions caused by multiple leukocyte dysfunction, presumably by specific bacterial infec. *Actinobacillus actinomycetemcomitans*

- Clinical Features:
  - Hyperkeratosis of the palms and feet,
-Oral manifestation:

- Reddish and hyperplastic gingivae.
- Deep periodontal pocket.

- Progressive exfoliation of all teeth due to periodontal disease.

• Treatment : Dental plaque control, good Oral Hygiene and aromatic retinoid for skin lesion.
Chediak –Higashi disease

- A rare autosomal-recessive disorder, affecting lysosomal storage, causing a qualitative neutrophil defect. Defect in neutrophil chemotaxis and abnormal degranulation, leading to poor phagocytosis.
- Overwhelming sepsis, children died by 10 years of age.
- Teeth are shed due to severe periodontal disease.
References
