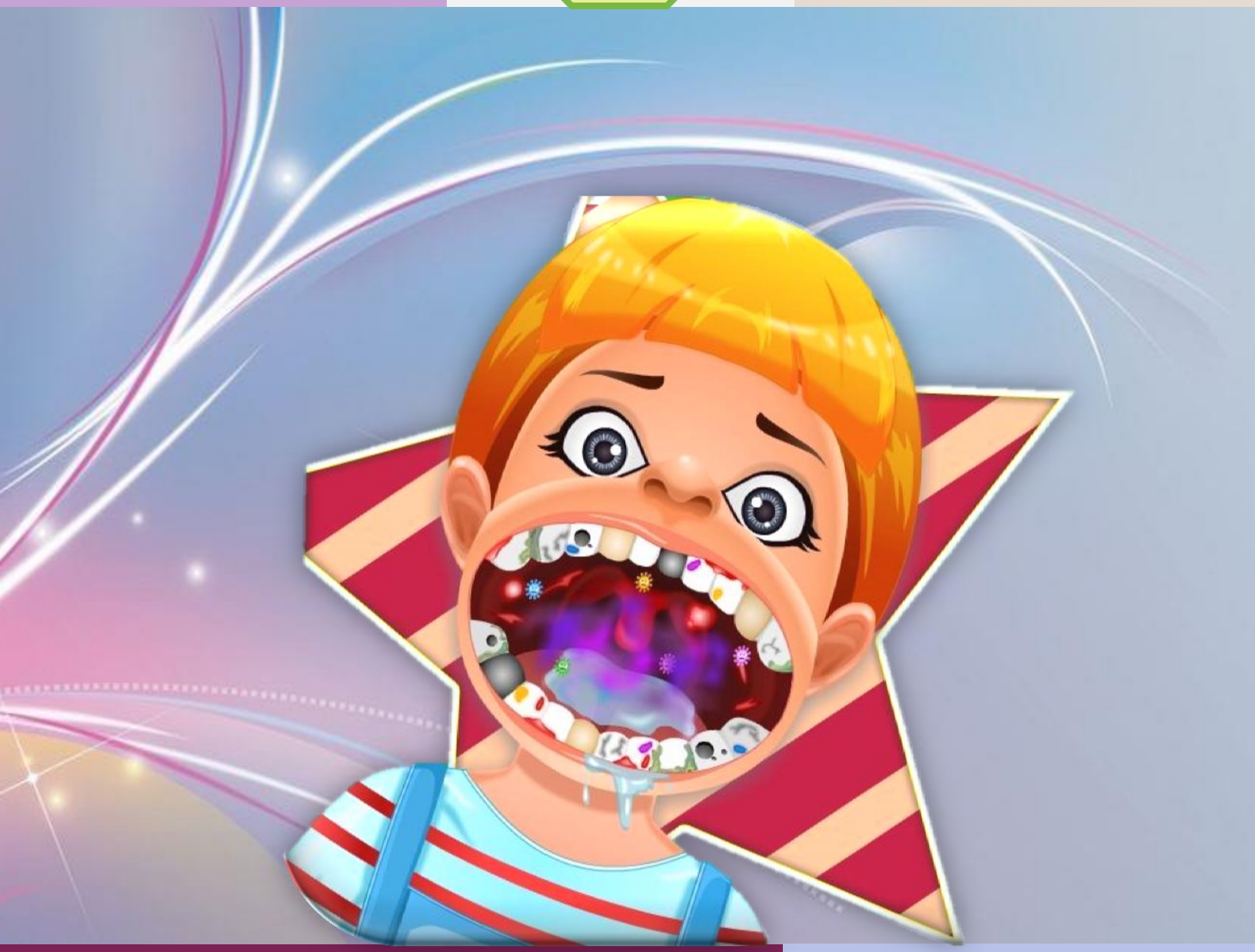
Pediatric Dentistry

4th year



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INFECTIONS MANIFESTATIONS AND MANAGEMENT

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Lesions of the oral soft tissues

Conditions affecting the oral mucosa and associated soft tissues can be classified as follows: infections, ulcers, vesiculobullous lesions, white lesions, cysts, and tumours.

Infections

Viruses, bacteria, fungi, or protozoa may cause infections of the oral mucosa, and also it may be affected by odontogenic infections.

VIRAL INFECTIONS

Herpetic infections

Primary herpes simplex infection *This condition usually occurs in children between the ages of 6 months and 5 years. Circulating maternal antibodies usually protect young babies.*

Prevention and Precautions

1. *Care should be taken to prevent autoinoculation of the child's eyes, genitalia and finger nails beds, as further Herpes Simplex Virus infection could result.*

2. *The child should be isolated from other children.*

Treatment

1. Tell the parent that disease is self-limiting.

2. Recommend soft, cold diet rather than hot, spicy and hard food and advice high fluid intake.

Although, no treatment is required but following methods may be used to treat the case.

Systemic: Acyclovir: 15 mg / kg / day for 5 days.

Topical:

1. Carboxymethyl-cellulose gelatin paste that adheres to mucous membrane and by covering mucous membrane and provides some relief from pain.

2. Mucopain ointment provides relief from pain.

Mouthwashes: Recommend chlorhexidine mouthwash 3 to 4 times\day. In infants or young children who are unable to rinse with chlorhexidine mouthwash, parents swabbed the child's oral lesion with chlorhexidine saturated cotton pellet for several times.

- ***Secondary herpes simplex infection*** *usually occurs at the labial muco-cutaneous junction and presents as a vesicular lesion that ruptures and produces crusting.*

Treatment

1. *Apply acyclovir cream in severe form of herpetic lesion.*
2. *Sunscreen is recommended to prevent recurrence of herpetic lesions.*

- ***Herpes varicella-zoster Shingles****, which is caused by the varicella-zoster virus, is much more common in adults than in children. The vesicular lesion develops within the peripheral distribution of a branch of the trigeminal nerve.* ***Chickenpox****, a more common presentation of varicella-zoster in children, produces a vesicular rash on the skin. The intra-oral lesions of chickenpox resemble those of primary herpetic infection. The condition is highly contagious.*

Mumps

Mumps produces a painful enlargement of the parotid glands. It is usually bilateral. The causative agent is a myxovirus. Associated complaints include headache, vomiting, and fever. Symptoms last for about a week and the condition is contagious.

Treatment

1. *Analgesic should be prescribed.*
2. *Advice hot saline gargles to open any obstruction in Stenson's duct.*
3. *Mouthwash like chlorhexidine should be recommended 3 times/day.*
4. *Vaccine may be useful as a prophylactic measure in susceptible individuals.*

Measles

The intra-oral manifestation of measles occurs on the buccal mucosa. The lesions appear as white speckling surrounded by a red margin. The oral signs usually precede the skin lesions and disappear early in the course of the disease. The skin rash of measles normally appears as a red maculopapular lesion. Fever is present and the disease is contagious.

Rubella

Rubella (German measles) does not usually produce signs in the oral mucosa; however, the tonsils may be affected. Protection against the

diseases of mumps, measles, and rubella can be achieved by vaccinating children with MMR vaccine in their early years.

Treatment

Symptomatic treatment may be given.

Herpangina

This is a Coxsackie virus A infection. It can be differentiated from primary herpetic infection by the different location of the vesicles, which are found in the tonsillar or pharyngeal region. Herpangina lesions do not coalesce to form large areas of ulceration. The condition is short-lived.

Treatment

- *No treatment is necessary.*
- *Mouthwashes, analgesic and antipyretic may be prescribed as symptomatic treatment.*

Hand, foot, and mouth disease

This Coxsackie virus A infection produces a maculopapular rash on the hands and feet. The intra-oral vesicles rupture to produce painful ulceration. The condition lasts for 10-14 days.

Treatment

Symptomatic treatment may be used:

1. *Mucopain ointment for local application.*
2. *Oral rinse (Chlorhexidine mouthwash).*
3. *Recommended soft fluid diet.*
4. *Avoid spicy food during disease.*

Infectious mononucleosis

The Epstein Barr virus causes this condition. It is not uncommon amongst teenagers. The usual form of transmission is by kissing. Oral ulceration and petechial haemorrhage at the hard soft palate junction may occur. There is lymph node enlargement and associated fever. There is no specific treatment. It should be noted that prescription of ampicillin and amoxicillin can cause a rash in those suffering from infectious mononucleosis. These antibiotics should be avoided during the course of the disease. Treatment is symptomatic and relies on analgesia and maintenance of fluid intake. It

must be remembered that aspirin should be avoided in children under 12 years of age.

Corona viral infection

*Coronaviruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (**MERS**) and Severe Acute Respiratory Syndrome (**SARS**). The most recently discovered coronavirus is Severe Acute Respiratory Syndrome coronavirus 2 (**SARS-CoV-2**) which causes coronavirus disease COVID-19*

Research indicates that children and adolescents are just as likely to become infected as any other age group and can spread the disease. Evidence to date suggests that children and young adults are less likely to get severe disease, but severe cases can still happen in these age groups.

Symptoms

The most common symptoms of COVID-19 are fever, dry cough, and tiredness. Other symptoms that are less common and may affect some patients include aches and pains, nasal congestion, headache, conjunctivitis, sore throat, diarrhea, loss of taste or smell or a rash on skin or discoloration of fingers or toes. These symptoms are usually mild and begin gradually. Some people become infected but only have very mild symptoms. However, anyone can catch COVID-19 and become seriously ill.

Oral manifestations

Oral lesions have not been yet described with a proven Covid-19 infection. Some described irregular ulcer occurred after a short time of macular erythematous lesion, which could be explained by vasculitis. While others observed multiple orange-colored ulcers with an erythematous halo and symmetric distribution on the hard palate of the patient. Some noticed multiple pinpoint yellowish ulcers with an erythematous halo on the hard palate of the patient. Another case was presented with multiple blisters on the inner lip mucosa. The patient reported that the lesions were more pruritic than painful.

Prevention

- *Clean the hands frequently and thoroughly*
- *Avoid touching the eyes, mouth and nose*

- *Cover when cough with the bend of elbow or tissue. If a tissue is used, discard it immediately and wash the hands.*
- *Maintain a distance of at least 1 meter from others.*

Management:

While some western, traditional or home remedies may provide comfort and alleviate symptoms of mild COVID-19, there are no medicines that have been shown to prevent or cure the disease. Self-medication with any medicines, including antibiotics are not recommended, as prevention or cure for COVID-19. Coordinating efforts to develop vaccines and medicines to prevent and treat COVID-19.

BACTERIAL INFECTIONS

Staphylococcal infections

Staphylococci and streptococci may cause impetigo. This can affect the angles of the mouth and the lips. It presents as crusting vesiculo-bullous lesions. The vesicles coalesce to produce ulceration over a wide area. Pigmentation may occur during healing. Staphylococcal organisms can cause osteomyelitis of the jaws in children. The condition is self-limiting, although antibiotics may be prescribed in some cases.

Streptococcal infection

Streptococcal infections in childhood vary from a mucopurulent nasal discharge to tonsillitis, pharyngitis, and gingivitis. Scarlet fever is a haemolytic streptococcal infection consisting of a skin rash with maculopapular lesions of the oral mucosa. It is associated with tonsillitis and pharyngitis. The tongue shows characteristic changes from a strawberry appearance in the early stages to a raspberry-like form in the later stages. Topical or systemic antibiotic should be prescribed.

Acute Necrotizing Ulcerative Gingivitis (Vincent Infection) or ANUG

The etiologies are Fusobacterium nucleatum and Borellia Vincentii. This disease is rare in children under the age of 16 years, except in undeveloped countries. It is characterized by rapid destruction of inter- dental papilla and

formation of punched out ulcers and presence of pseudo membranous necrotic tissues of the marginal gingiva. The ANUG may be localized or generalized. In extensive case both free and attached gingival may be affected and patient showed severe halitosis, which is characteristic of ANUG. Clinical manifestations of disease include poor appetite, fever and general malaise.

Treatment

1. *Remove gross calculus and debris from the gingival margins by scaling and irrigation with 20 vol. Hydrogen peroxide.*
2. *Prescribe metronidazole and penicillin group or cephalosporin group of drug or erythromycin for 7 days.*
3. *Recommend 3 % hydrogen peroxide with equal amount of warm water gargles every 2 hours and chlorhexidine mouth wash three times a day (2 to 3 weeks).*
4. *Give detailed oral hygiene instruction with avoidance of spicy food.*

Congenital syphilis

Congenital syphilis is transmitted from an infected mother to the fetus. Oral mucosal changes such as rhagades, which is a pattern of scarring at the angle of the mouth, may occur. In addition, this disease may cause characteristic dental changes in the dentition. These include Hutchinson incisors (the teeth taper towards the incisal edge rather than the cervical margin) and mulberry molars (globular masses of enamel over the occlusal surface).

Management

1. *Aqueous crystalline penicillin G is recommended if congenital syphilis is proved or is highly suspected. Procaine penicillin G has been recommended as an alternative.*
2. *Surgical correction of facial defects gives good esthetic results.*
3. *Correction of dental defects using veneers or partial or full coverage crowns may be done.*

Diphtheria

It is an acute, life-threatening, contagious bacterial infection caused by gram-positive bacillus, Corynebacterium diphtheria.
Humans being the sole reservoirs, the infection mainly spreads via droplet inhalation.

Clinical features

- *Occurrence in children is most common, especially during winter season*
- *Clinical manifestations of fever, malaise, chills, headache, anorexia and vomiting are seen*
- *Enlargement of regional lymph nodes, especially cervical lymph nodes*
- *A patchy, yellowish-white thin film covered by grayish adherent membrane is seen known as "diphtheritic membrane"*
- *Raw bleeding surface is seen left when this membrane is stripped off*
- *Due to involvement of soft palate, uvula, larynx and trachea, there occurs sore throat and respiratory difficulties*
- *In severe cases, paralysis of soft palate can be seen.*

Management

1. *Prophylactic active immunization with diphtheria toxoid.*
2. *Use of antitoxin in combination with antibiotics.*

Actinomycosis

Actinomycosis can occur in children. It may follow intra-oral trauma including dental extractions. The organisms spread through the tissues and can cause dysphagia if the submandibular region is involved. Abscesses may rupture onto the skin and long-term antibiotic therapy is required. Penicillin should be prescribed and maintained for at least 2 weeks following clinical cure.

FUNGAL INFECTION

Neonatal acute candidiasis (thrush) contracted during birth is not uncommon. Young children may develop the condition when resistance is lowered or after antibiotic therapy. Easily removed white patches on an erythematous or bleeding base are found. Treatment with nystatin or

miconazole is effective (those under 2 years of age should receive 2.5 ml of a miconazole gel (24mg/ml) twice daily; 5 ml twice daily is prescribed for those under 6 years of age, and 5 ml four times daily for those over 6 years of age).

PROTOZOAL INFECTION

Infection by Toxoplasma gondii may occasionally occur in children, with the principal reservoir of infection being cats. There may be a granulomatous reaction in the oral mucosa and there can be parotid gland enlargement. The disease is self-limiting, although an antiprotozoal such as pyrimethamine may be used in cases of severe infection.

ODONTOGENIC INFECTION:

The major cause of this condition is dental in origin. The minor oral surgical treatments may all be employed to definitively treat the source of an orofacial infection. Alternatively, conservative treatments such as endodontic therapy may be appropriate. However, a rapidly spreading extra-oral infection is a surgical emergency that merits immediate treatment and may require admission for inpatient management.
Two areas of extra-oral spread are of special importance. These are the submandibular region and the angle between the eye and the nose.

Swelling in the submandibular region

Arising from posterior mandibular teeth can result in the floor of the mouth being raised. This can cause a physical obstruction to breathing, and spread from this region to the parapharyngeal spaces may further obstruct the airway. The advance from dysphagia to dyspnoea can be rapid. A submandibular swelling should be decompressed as a matter of urgency in children. A child with rising of the floor of the mouth requires immediate admission to hospital.

Infection involving the angle between the eye and the nose

Has the potential to spread intracranially and produce a cavernous sinus thrombosis. This is a potentially life-threatening complication. The angular

veins of the orbit (which have no valves) connect the cavernous sinus to the face, and if the normal extracranial flow is obstructed as a result of pressure from the extra-oral infection, infected material can enter the sinus by reverse flow. To prevent this complication, infection in this area (which arises from upper anterior teeth, especially the canines) must be treated at once.

The principles of the treatment of acute infection are:

- *Removal of the cause is essential to cure an orofacial infection arising from a dental source. This usually means extraction or endodontic therapy.*
- *Institution of drainage and prevention of spread are supportive treatments they are not definitive cures. Drainage may be obtained during the removal of the cause (e.g. a dental extraction) or may precede definitive treatment if this makes management easier (e.g. incision and drainage of a submandibular abscess). Drainage may be intra- or extra-oral.*
- *Prevention of spread can be achieved surgically or by the use of antibiotics. In severe cases intravenous antibiotics will be used. The antibiotic of choice in children is a penicillin such as amoxicillin.*
- *It is important to remember that acute infections are painful and that analgesics, should be prescribed. The use of paracetamol elixir is usually sufficient. Similarly, it is important that a child suffering from an acute infection is adequately hydrated. If the infection has restricted the intake of oral fluids because of dysphagia, admission to hospital for intravenous fluid replacement is required.*