LUPINE PUBLISHERS

Interventions in Pediatric Dentistry Open Access Journal

DOI: 10.32474/IPDOAJ.2021.06.000247

ISSN: 2637-6636

Review Article

Periodontal Diseases in Children

Mohammad Karimi*

Department of Pediatric Dentistry, Sepideh Dental Clinic, Iran

***Corresponding author:** Mohammad Karimi, Department of Pediatric Dentistry, Sepideh Dental Clinic, Iran

Received: August 27, 2021 **Published:** September 08, 2021

Abstract

Periodontal disease in children is a condition in which there are destruction and resorption of the supporting bone of the teeth, which has three types: local, diffuse, and pre-pubertal. The local type of severe bone resorption is symmetrically and bilaterally in the deciduous dental arch, which is not accompanied by inflammation of the gingival tissue and plaque. The causative agents are hereditary blood disorders along with bacterial agents. In the diffuse type, which occurs mostly in puberty and progressively, symptoms such as gingivitis, plaque, and calculus are evident. Treatment for these two conditions is surgery with the use of Tetracycline and sometimes Metronidazole. Local bone resorption is mainly the cause of systemic diseases such as blood disorders, leukemia, diabetes, and inherited Syndromic diseases. Gingival recession can be caused by chronic inflammation due to poor hygiene, the presence of orthodontic stimuli and movements, and oral habits. Sometimes gingival resorption is caused by self-harm for psychological reasons that the child damages the gingival tissues. The third category is the pre-pubertal type, which occurs at the age of 4 during or after the growth of mammary glands, which sometimes occurs early due to the severity of tooth decay. Treatment is early diagnosis, curettage, massage, and health education. Sometimes broad-spectrum antibiotics are necessary.

Keywords: Bone resorption; periodontal disease; gingivitis; poor oral; hygiene; inflammation; antibiotics

Introduction

Gum disease or periodontal disease is a complication caused by bacteria and food particles that remain on the surfaces of the teeth. When these particles accumulate on the tooth surface, they form a hard, sticky layer called plaque on the tooth. In the next stage, these plaques become harder and become calcified (tartar) and at the same time, the formation of new plaques continues. Eventually, these factors will cause the gums to become red and swollen. If this condition persists and worsens, it can also damage the soft tissues and bones that support the teeth, leading to loosening of the teeth. Severe gum disease as a manifestation of systemic disease is not very common in children [1,2], but mild gum disease and inflammation without detectable loss of bone or clinical attachment, is very common in children [3-5]. The disease begins in early childhood and increases in early adolescence. In some cases, the disease may progress without any pain or symptoms. The causes can be due to poor oral hygiene [6,7], hormonal changes during puberty [8-11], hereditary blood disorders [12,13], inherited Syndromic diseases [12,13], bacterial agents, and infections [14-16], and systemic diseases such as diabetes [17-19]. Different types of gum disease can be prevented by correct diagnosis and timely application of different treatments.

Signs and Symptoms

Gum diseases can be completely painless, so it is important to be aware of the symptoms of the disease and to follow it closely, and carefully to prevent the disease from progressing. The most important of these symptoms are [20-24]:

a. Swelling, redness, tenderness, and bleeding gums

b. Bleeding gums when brushing or flossing

c. Persistent bad breath or bad odor in the baby's mouth (treatment of bad breath in children will be done in different ways)

d. Loose or falling teeth

e. Tooth decays or gums recession

f. Obvious signs of pus accumulation and infection around the teeth, gums, and in the sulcus area.

g. A change in bite and jaw alignment

h. Changes in the position of the teeth

Causes

Adolescence

Adolescents may develop gum disease early in puberty. During this period, the levels of the hormone progesterone and possibly estrogen increases and leads to increase blood flow to the gums. Significant changes in steroid hormone levels during puberty can cause gingival inflammation [8,9]. Some studies indicate an uprising

condition in inflammation of gingiva in puberty time in both genders [10,11]. As a result, the gums become more susceptible to bleeding and disease at this time.

Childhood

a) The most important cause of mild gum disease in children is usually inflammation due to poor hygiene [6,7], the presence of orthodontic stimuli and movements [25,26], and oral habits such as mouth breathing (27) and nail-biting [28].

b) Having some diseases can increase the risk of gum disease in children. The most important of which are the following diseases:

c) Kindler syndrome, Type 1 diabetes, Down syndrome, Papillon, and Papillon- Lefebvre Syndrome, systemic disease such as blood disorders, leukemia [12,13,17-19]

d) Genetic and hereditary factors can also increase a child's risk of gum disease [29,30]. So, if there is any family history of gum disease, parents should report that to the pediatric dentist.

Types of periodontal diseases in children

a) Chronic mild gingivitis is a common disease in children [3-5]. This condition usually causes the gum tissue to swell, turn red, and the gums to bleed quickly [31]. Severe gingivitis (periodontitis) can be both prevented and treated by brushing and flossing regularly and taking care of oral health. But if gingivitis is not treated in time, it can lead to more advanced and devastating forms of periodontal disease.

b) Aggressive gingivitis (invasive periodontitis) can affect young people who have health problems. Severe invasive periodontal disease (periodontitis) is more common in adolescents and young adults and mainly affects the first molar teeth and incisors [32]. One of the hallmarks of this disease is severe jawbone damage [33]. Interestingly, there are very little plaque and calculus on the patient's teeth.

c) Severe invasive gingivitis (periodontitis) can occur near puberty and involve all parts of the mouth [34]. This complication is associated with severe inflammation of the gums and the accumulation of plaque and a large area of calculus on the teeth. There is rapid bone loss around nearly all teeth and marked gingival inflammation [34]. Eventually, it can cause the teeth to loosen and fall out.

Gingival Recession Due To The Progression Of Gum Disease

If gingivitis is not treated, it can lead to gum recession which is the progressive and intensifying loss of gum tissue that is commonly seen in the cervical area of the tooth. Failure to treat this problem also leads to the appearance of tooth roots and pain and tenderness. Although the gingival recession is more common in adults over the age of 40 [35], children are not immune to the disease; Children may experience this condition at an early age [36]. Smoking, hormones, incorrect brushing, poor oral hygiene, bruxism, or gum disease are some of the risk factors for the gingival recession in adults [37-41]. But the main cause of gingival recession in children is the abnormal eruption of teeth in the wrong place [36].

Diagnosis And Treatment Of Periodontal Diseases

Periodontal disease is usually diagnosed based on the patient's medical history and the results of the child's physical examination. During the physical examination, the dentist examines the child's gums and the sulcus areas for signs of periodontal disease. X-rays of teeth can help diagnose and treat periodontal disease. Treatment of gum diseases in children can be done using one or a combination of the following methods:

Scaling and cleaning teeth

In scaling, bacterial plaque and plaque on the surface of the teeth above and below the gum line are removed carefully. The scaling is done with the EMS Ultrasound system, with the additional use of the manual curettes. Based on the lifestyle of the children, their nutrition, the quality of their saliva, their gums, and their teeth, the patients should be put in a personalized recall program, which will help them maintain an excellent level of oral hygiene and reach the ultimate goal.

Antibiotics Therapy

Even though there is some controversy about the usage of systemic antibiotics, two reviews have provided the benefits of antibiotic therapy for periodontitis treatment [42,43]. The most commonly prescribed antibiotics for the treatment of periodontitis include Penicillins (amoxicillin), Tetracyclines (Tetracycline, Doxycycline), Metronidazole, Macrolides (Spiramycin, Erythromycin, and Azithromycin), Clindamycin, and Ciprofloxacin. The most common combination antibiotic regimen reported is Metronidazole and Amoxicillin combined [44]. These antibiotics are often used in combination with scaling and cleaning teeth to stop the spread of infection and inflammation in the mouth and to treat gingivitis. Antibiotics are available in a variety of forms, including mouthwashes and gels, fibers containing antibiotics, or oral intake. These gels are placed inside the gingival pockets to gradually destroy the bacteria and help the gums heal.

Surgery

To treat advanced periodontal disease, the dentist may have to flap the area and clean the gingival sulcus area involved in the disease. In this case, after cleaning these infected parts, the dentist may apply the antibiotic gels to cover the infected area so that to have a better prognosis.

Gingival Graft

If the severity of the disease and the destruction of the gingival tissue is too great to be sutured, the dentist will remove part of the healthy gingival tissue from the patient's palate and graft it onto the site of badly damaged. This connective tissue replaces the diseased tissue and helps to keep the teeth and improve their appearance. A

gum graft surgery aims to extend keratinized tissue of the gums to cover tooth roots [45] which restores their firm placement within the jaw and prevents further damage.

Conclusion

Periodontal disease is a serious bacterial infection. It destroys the gums and supporting structures of the teeth. The buildup of plaque and calculus on the teeth is the main cause of periodontal disease. Poor oral hygiene habits allow plaque to grow in the mouth. Some factors may raise the risk of periodontal disease in children. These include certain genes, poor oral hygiene, autoimmune or systemic diseases, hormonal changes, etc. Periodontal disease can range from mild to severe. Most children with gum disease have the mildest form. Generally, gum disease isn't painful. It causes the gums to become red, swollen, and sore. More advanced cases of gum disease are not common in children. Treatment will depend on the child's symptoms, age, and general health. It will also depend on how severe the condition is. Good dental habits can prevent gum disease. Scaling and root planning, antibiotic therapy, and surgery are the suggested treatments.

References

1. Page RC, Bowen T, Altman L (1983) Pre-pubertal periodontitis. I. Definition of a clinical entity. J Periodontol 54: 257-271.
2. Watanabe K (1990) Prepubertal periodontitis: A review of diagnostic criteria, pathogenesis, and differential diagnosis. J Periodont Res 25: 31-48.
3. Marshall-Day CD, Shourie KL (1949) A roentgenographic survey of periodontal disease in India. J Am Dent Assoc 39: 572-588.
4. Pilot T, Barmes DE, Leclercq MH, McCombie BJ, Sardo IJ (1987) Periodontal conditions in adolescents, 15-19 years of age: An overview of CPITN data in the WHO Global Oral Data Bank. Community Dent Oral Epidemiol 15: 336-338.
5. Arnlaugsson S, Magnusson TE (1996) Prevalence of gingivitis in 6-year-olds in Reykjavik, Iceland. Acta Odontol Scand 54: 247-250.
6. de Oliveira C, Watt R, Hamer M (2010) Toothbrushing, inflammation, and risk of cardiovascular disease: Results from Scottish Health Survey. BMJ 340: c2451.
7. Albandar JM (2002) Global risk factors and risk indicators for periodontal diseases. Periodontol 2000 29: 177–206.
8. Mariotti A (1994) Sex steroid hormones and cell dynamics in the periodontium. Crit Rev Oral Biol Med 5(1): 27–53.
9. Mariotti A, Mawhinney M (2013) Endocrinology of sex steroid hormones and cell dynamics in the periodontium. Periodontol 2000 61(1): 69–88.
10. Hefti A, Engelberger T, Buttner M (1981) Gingivitis in Basel school children. SSO Schweiz Monatsschr Zahnheilkd 91(12): 1087–1092.
11. Sutcliffe P (1972) A longitudinal study of gingivitis and puberty. J Periodontal Res 7(1): 52–58.
12. Marcel Hanisch, Thomas Hoffmann, Lauren Bohner, Lale Hanisch, Korbinian Benz, et al. (2019) Rare Diseases with Periodontal ManifestationsInt. J Environ Res Public Health 16: 867.
13. Grollmus Zacy, Morales-Chávez, Mariana Silvestre, Francisco J (2007) Periodontal disease associated to systemic genetic disorders, Medicina oral, patología oral y cirugía bucal 12: 211-215.
14. Bascones Martínez A, Figuero Ruiz E (2005) Periodontal diseases as bacterial infection, Av Periodon Implantol 17(3): 111-118.
15. Christina Popova, Velitchka Dosseva-Panova, Vladimir Panov (2013) Microbiology of Periodontal Diseases, A Review. Biotechnology & Biotechnological Equipment 27(3): 3754-3759.
16. Yang NY, Zhang Q, Li JL, Yang SH, Shi Q (2014) Progression of periodontal inflammation in adolescents is associated with an increased number of Porphyromonas gingivalis, Prevotella intermedia, Tannerella Forsythensis, and Fusobacterium Nucleatum. Int J Paediatr Dent 24(3): 226–233.
17. Casanova L, Hughes FJ, Preshaw PM (2014) Diabetes and periodontal disease: A two-way relationship. Br Dent J 217: 433–437.
18. Chávarry NG, Vettore MV, Sansone C, Sheiham A (2009) The relationship between diabetes mellitus and destructive periodontal disease: A meta-analysis, Oral Health Prev Dent 7: 107–127.
19. Preshaw PM, Bissett SM (2013) Periodontitis: An oral complication of diabetes. Endocrinol Metab Clin North Am 42: 849–867.
20. (2018) Gum Disease. National Institute of Dental and Craniofacial Research.
21. (2018) Periodontal Disease. CDC.
22. BL Pihlstrom, BS Michalowicz, NW Johnson (2005) Periodontal diseases. The Lancet 366(9499): 1809–1820.
23. TJ Oh, R Eber, HL Wang (2002) Periodontal diseases in the child and adolescent. Journal of Clinical Periodontology 29(5): 400–410.
24. JR Pinkham, PS Casamassimo, HW Fields, DJ McTigue, A Nowak (2005) Pediatric Dentistry, Elsevier Saunders.
25. Krishnan Vinod, Ranjith Ambili, Davidovitch Ze'ev, Murphy Neal (2007) Gingiva and Orthodontic Treatment. Seminars in Orthodontics 13: 257-271.
26. Draghici Emma, Crăiţoiu Stefania, Mercut, Veronica, Monica Scrieciu, Popescu Sanda et al. (2016) Local cause of gingival overgrowth, Clinical and histological study, Romanian journal of morphology and embryology. Revue roumaine de morphologie et embryologie 57(2): 427-435.
27. Rajinder Kumar Sharma, Anu Bhatia, Shikha Tewari, Satish Chandar Narula (2016) Distributional Gingival Inflammation in Mouth Breathing Patients: An Observational Pilot Study. Journal of Dentistry Indonesia 23(2): 28-32.
28. Curtis J Creath, Stephanie Steinmetz, Robert Roebuck (1995) Gingival swelling due to a fingernail-biting habit. JADA A Case Report 126(7): 1019-1021.
29. Wankhede Anand, Wankhede Sayli Anand, Wasu Shilpa Prashan (2017) Role of genetic in periodontal disease. Journal of the International Clinical Dental Research Organization 9: 53.
30. Wankhede Anand, Wankhede, Sayli Anand, Wasu Shilpa Prashant (2017) Role of genetic in periodontal disease. Journal of the International Clinical Dental Research TABA JR, Mario, SOUZA Sergio Luis Scombatti de, MARIGUELA Viviane Casagrande (Eds.), Periodontal disease: a genetic perspective. Braz oral res São Paul 26(1): 32-38.
31. William V Stenberg Jr, Alexander Alcaraz (2019) Periodontal Problems in Children and Adolescents. Pediatric Dentistry 6th Edition pp. 371-378.
32. Jasim M Albandar (2014) Aggressive and acute periodontal diseases. Periodontology 65(1): 7-12.
33. Kinane Denis, Stathopoulou Panagiota, Papapanou Panos (2017) Periodontal diseases, Nature Reviews Disease Primers.
34. Research, Science, and Therapy Committee Guidelines of the American Academy of Periodontology, Periodontal Diseases of Children and Adolescents. J Periodontol 74: 1696-1704.

35. Receding Gums.

36. Mathur Anmol (2009) Gingival recession in school kids aged 10-15 years in Udaipur, India. Journal of Indian Society of Periodontology 13(1): 16-20.

37. Palmer RM, Wilson RF, Hasan AS (2005) Mechanism of action of environmental factors- tobacco smoking. J Clin Periodontol 32: 180–195.

38. Academy Reports (1999) Tobacco use, and periodontal patient. J Periodontol 70: 1419–1427.

39. Kassab M, Cohen R (2003) The etiology and prevalence of gingival recession. J Am Dent Assoc 134: 220–225.

40. Tugnait A, Clerehugh V (2001) Gingival recession its significance and management. J Dent 29: 381–394.

41. Chrysanthakopoulos Nikolaos (2014) Gingival recession: prevalence and risk indicators among young Greek adults, Journal of clinical and experimental dentistry 6: 243-249.

42. Herrera D, Sanz M, Jepsen S, Needleman I, Roldan S (2002) A systematic review on the effect of systemic antimicrobials as an adjunct to scaling and root planing in periodontitis patients. J Clin Periodontol 3: 136–159, 160-132.

43. Haffajee AD, Socransky SS, Gunsolley JC (2003) Systemic anti-infective periodontal therapy, a systematic review. Ann Periodontol 8: 115–181.

44. LJA Heitz-Mayfield (2009) Systemic antibiotics in periodontal therapy. Australian Dental Journal 54(1): 96-101.

45. (2015) Gum Tissue Graft Surgery: Procedure, Recovery, Complications, and More.

DOI: 10.32474/IPDOAJ.2021.06.000247