

Periodontitis in Children And Adolescents

*Dr. Divya Bhadran¹, Dr. Sreeraj Rajappan²

¹(Assistant Professor, Department of Paedodontics, Government Dental College, Allepey, Kerala, India)

²(Assistant Professor, Department of Periodontics, Government Dental College, Allepey, Kerala, India)

Corresponding author: * Dr. Divya Bhadran

Abstract : Children and adolescents can be affected by numerous periodontal diseases. These diseases have been broadly classified into gingivitis and periodontitis. The classification of periodontitis has undergone considerable changes and improvements over the years. Various old terminologies like early onset periodontitis, adult onset periodontitis and prepubertal periodontitis has been discarded in the new classification system and have been replaced by terms like aggressive periodontitis, chronic periodontitis and periodontitis as a manifestation of systemic disease. Periodontitis commonly seen children and adolescents include the aggressive periodontitis and periodontitis as a manifestation of systemic disease.

Keywords : periodontitis, children, adolescents, classification

Date of Submission: 03 -08-2017

Date of acceptance: 12-08-2017

I. Introduction

There are numerous periodontal disease which affect children and adolescents. The most common of these conditions are the plaque induced gingivitis and puberty associated gingivitis, both of which are easily preventable and have good prognosis after treatment. Periodontitis though less commonly seen in children are in many cases associated with severe periodontal destruction and have poor prognosis [1]. This article presents the classification and clinical features of periodontitis affecting children and adolescents.

II. Classification of Periodontitis

Periodontal diseases can be broadly classified into gingivitis and periodontitis. The etiology of gingivitis is dental plaque microorganisms and their products and is confined to the gingiva. Some cases of gingivitis if not checked progresses to involve the deeper periodontal structures, leading to destruction of supporting alveolar bone and periodontal ligament with increasing probing pocket depth, recession or both and is then known as periodontitis [2]. The clinical feature which differentiates periodontitis from gingivitis is clinically detectable attachment loss. The classification of periodontitis has undergone considerable changes and improvements over the years.

III. Old Classification

Early classification includes the classification of periodontal disease given by American Academy of Periodontology based on the World Workshop of Clinical Periodontology held in 1989 [3]. They had classified periodontitis into the following categories:-

I. Adult periodontitis

II. Early-onset periodontitis

A. Pre-pubertal periodontitis

1. Generalized

2. Localized

B. Juvenile periodontitis

1. Generalized

2. Localized

C. Rapidly progressive periodontitis

III. Periodontitis associated with systemic disease

IV. Necrotizing ulcerative periodontitis

V. Refractory periodontitis.

Early-onset periodontitis: - The term early-onset periodontitis encompasses a group of diseases diagnosed in patients under the age of 35 years and is characterized by rapid destruction of the periodontium and a tendency to aggregate in families. These included the prepubertal periodontitis, localized early onset periodontitis (localized juvenile periodontitis) and the generalized early onset periodontitis (generalized juvenile periodontitis, generalized severe periodontitis and rapidly progressive periodontitis).

Prepubertal periodontitis: - This was first described by Page et al. as periodontitis with severe periodontal destruction involving the deciduous dentition and later the permanent dentition [4]. Females were found to be affected more than males. Both localized and generalized forms have been described for the condition.

Localized early onset periodontitis: - Also known as the localized juvenile periodontitis. Hart et al had described localized juvenile periodontitis as cases having attachment loss of > 4mm on at least 2 permanent first molars and incisors (one of which must be a first molar) [5]. Subject must be less than 35 years of age and otherwise systemically healthy.

Generalized early onset periodontitis: - These include the generalized juvenile periodontitis, generalized severe periodontitis and rapidly progressing periodontitis. According to Hart et al it occur between puberty and 35 years of age in a systemically healthy patient and is diagnosed if attachment loss of > 5mm on a minimum of 8 permanent teeth (one of which must be a first molar) and involving at least 3 permanent teeth other than incisors and first molars [5].

Incidental Early Onset Periodontitis: - These include adolescents and young adults who do not fulfill the criteria of either localized or generalized aggressive periodontitis but have > 4mm of attachment loss in one or more teeth [5].

Adult periodontitis: - It is generally seen at > 35 years of age. However it has been suggested that it is initiated at or after puberty but is manifested only at 3rd to 4th decade of life.

Incipient adult periodontitis: - Various studies have shown that > 1mm of attachment loss and early bone loss are prevalent in adolescents. A study done on Swedish adolescent population found that 9.4% of 16 year olds and 19.4 % of 18 year olds had attachment loss [6]. Incipient adult periodontitis is early adult periodontitis with attachment loss which is not related to buccally occurring gingival recession.

Necrotizing ulcerative periodontitis: - It is a fusospirochetal infection characterized by necrosis of gingiva, periodontal ligament and alveolar bone. Usually preceded by acute necrotizing ulcerative gingivitis, it is seen commonly in patients having systemic conditions like viral infections, malnutrition and immunosuppression. Cancrum oris or Noma is commonly seen in underprivileged African children suffering from severe malnutrition and endemic communicable disease like measles [7]. Due to the systemic predisposition the infection is not confined to gingiva but spread to involve the periodontium and the surround oral structures leading to severe necrosis and sequestration.

IV. Latest Classification

It was found that old classification system for periodontitis had many shortcomings. Evidence was found to be lacking regarding classification of refractory periodontitis, adult onset periodontitis and early onset periodontitis as distinct disease entities. It was found that chronic periodontal destruction caused by accumulation of local factors such as dental plaque can occur before 35 years of age. Also little evidence is there for classification of refractory periodontitis as distinct clinical entity since factors which causes attachment loss and bone destruction after periodontal therapy is ill defined and applies to many disease entities [8]. As a result, International Workshop for the Classification of Periodontal Diseases organized by American Academy of Periodontology in 1999 decided to modify the classification system based on current clinical and scientific data [3]. They classified periodontitis based on clinical, radiographic, historical, and laboratory characteristics into the following categories:-

- I. Chronic periodontitis
- II. Aggressive periodontitis
- III. Periodontitis as a manifestation of systemic conditions
 1. Hematologic disorders
 - a. Acquired neutropenia
 - b. Leukemias
 - c. Other
 2. Genetic disorders
 - a. Familial and cyclic neutropenia
 - b. Down syndrome
 - c. Leukocyte adhesion deficiency syndromes
 - d. Papillon-Lefèvre syndrome
 - e. Chediak-Higashi syndrome

- f. Histiocytosis syndromes
- g. Glycogen storage disease
- h. Infantile genetic agranulocytosis
- i. Cohen syndrome
- j. Ehlers-Danlos syndrome (types IV and VIII autosomal dominant)
- k. Hypophosphatasia
- l. Other
- 3. Not otherwise specified

Chronic periodontitis: -Adult periodontitis has been renamed as chronic periodontitis .It generally occurs in adults but can be seen in children. It is associated with local factors like calculus and dental plaque and amount of periodontal destruction is consistent with local factors. Subgingival calculus is frequently found and is associated with variable microbial pattern. There is slow to moderate rate of periodontal destruction with periods of rapid progression. It can be modified by systemic factors like uncontrolled diabetes mellitus and HIV infection, local factors like plaque retentive areas and environmental factor like cigarette smoking and emotional stress. It can be sub classified into localized and generalized based on whether less than 30% or more than 30% sites are involved.

Aggressive Periodontitis: - Early onset periodontitis has been renamed as aggressive periodontitis. The term prepubertal periodontitis has been discarded, and these forms of periodontitis are now described as localized or generalized aggressive periodontitis occurring prepubertally. The following characteristics are common to all patients suffering from aggressive periodontitis

- 1. Otherwise clinically healthy patient.
- 2. Rapid attachment loss and bone destruction.
- 3. Amount of microbial deposits is inconsistent with disease severity.
- 4. Familial aggregation of diseased individuals is seen.

The following characteristics are common but not seen in all patients suffering from aggressive periodontitis:

- 1. Diseased sites infected with aggregatibacter actinomycetemcomitans.
- 2. Abnormalities in phagocyte function.
- 3. Hyperresponsive macrophages, producing increased prostaglandin E2 and interleukin-1 β .
- 4. In some cases, self-arresting disease progression.

Aggressive periodontitis may be further classified into localized and generalized aggressive periodontitis based on the following specific features: -

Localized aggressive periodontitis

- 1. Circumpubertal onset of disease.
- 2. Localized first molar or incisor disease with proximal attachment loss on at least two permanent teeth, one of which is a first molar.
- 3. Robust serum antibody response to infecting agents.

Generalized aggressive periodontitis

- 1. Usually affecting persons under 30 years of age (however may affect older individual).
- 2. Generalized proximal attachment loss affecting at least three permanent teeth other than first molars and incisors.
- 3. Pronounced episodic nature of periodontal destruction.
- 4. Poor serum antibody response to infecting agents.

Periodontitis as a manifestation of systemic disease: - Several hematologic and genetic disorders have been associated with the development of severe periodontitis and are now known as periodontitis as a manifestation of systemic disease. The majority of these are based on case reports and only a few research studies have been done primarily because of rarity of the conditions. Periodontitis as a manifestation of systemic disease is diagnosed when the systemic condition is the major predisposing factor and local factors such as large quantities of plaque and calculus are not present.

V. Conclusion

Aggressive periodontitis and periodontitis associated with systemic conditions commonly affect children and adolescents and these conditions are associated with severe periodontal destruction and debilitation. Moreover incipient form of chronic periodontitis may be more common in adolescents than

previously believed. Early diagnosis based on latest classification system is needed for early management in these conditions.

References

- [1]. Pari A, Ilango P, Subbareddy V, Katamreddy V, Parthasarthy H. Gingival Diseases in Childhood – A Review. *Journal of Clinical and Diagnostic Research* 8(10), 2014.
- [2]. Page, R. C. Current understanding of the aetiology and progression of periodontal disease, *International dental journal* 36(3), 1986, 153-161.
- [3]. Armitage, Gary C. Development of a classification system for periodontal diseases and conditions, *Annals of periodontology*, 1999, 1-6.
- [4]. Page, Roy C., et al. Prepubertal periodontitis. I. Definition of a clinical disease entity, *Journal of periodontology* 54(5), 1983, 257-271.
- [5]. Kinane, Denis F., Periodontal disease in children and adolescents: introduction and classification, *Periodontology 2000* 26(1), 2001, 7-15.
- [6]. Källestål, Carina, Lars Matsson, and Anna- Karin Holm., Periodontal conditions in a group of Swedish adolescents (I). A descriptive epidemiologic study, *Journal of Clinical Periodontology* 17(9), 1990, 601-608.
- [7]. Enwonwu, Cyril O., William A. Falkler, and Reshma S. Phillips, Noma (cancrum oris), *The Lancet* 368(9530) 2006, 147-156.
- [8]. Michel G Newman, Classification and epidemiology of periodontal diseases, *Carranza's Clinical Periodontology*, 11(Elsevier) 33-54.

*Dr. Divya Bhadran. "Periodontitis in Children And Adolescents." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* , vol. 16, no. 08, 2017, pp. 19–22.