

New Classification of Periodontal Diseases

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Summary

The problem of classification of periodontal diseases is extremely difficult and complex. When the development of periodontology is analysed it can be seen that different attempts have been made to change not only terminology in periodontology but also classification of periodontal diseases. This frequently resulted in a large number of individual systems of classification, while those that were generally acknowledged appeared during the last ten years. Consequently the aim of this study was to present the latest generally accepted classification, proposed by acknowledged world experts during the International Workshop for Classification of Periodontal Diseases and Conditions, in 1999.

Key words: *classification, periodontal diseases*

Acta Stomat Croat
2001; 89-93

REVIEW

Received: January 18, 2001

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Introduction

During the last 25 years significant success has been achieved in comprehension of the nature of periodontal diseases. Epidemiologists have cast new light on the incidence, prevalence, nature and risk of disease. Oral microbiologists have elucidated the role of specific types of microorganisms which induce the disease, and explained the role of the host during the development and progression of the disease. Furthermore, it has been demonstrated that it is possible to slow down and halt the progression of disease, and to establish already lost periodontal tissue by new treatment strategy (1). Regardless of the foregoing discussion continues with regard to classification, and thus there is still no reliably explicit doctrinarian view. Unquestionably classification of periodontal diseases is very complex and certainly not easy. It is, therefore, understand-

able that besides the numerous classifications which have been applied so far, or are still in use, the latest classification is only a temporary solution to this problem.

The first generally acknowledged classification appeared in 1966 in Ann Arbor (Michigan, USA) during the first Workshop, at which there was almost no discussion on classification of diseases, apart from their classification into "Gingivitis" and "Periodontitis". The reason for this being that at that time classifications were based more on the pathomorphological, i.e. on the basis of clinical appearance and course of disease, while knowledge on the aetiology and pathogenesis were deficient (2). However, a dynamic pathobiological view, based on aetiology and microbiology, changed the concept of classification at that time, mainly due to the authors Page and Schroeder in 1982 (3). At the

Third World Workshop of the American Academy of Periodontology (AAP) held in 1989 in Princetown (California, USA) for the first time a detailed classification was presented of periodontal diseases and conditions (4). During the following years classification of periodontal diseases was corrected and simplified in America and in Europe (5). At the beginning of November, 1999 the Workshop for Classification of Periodontal Diseases and Conditions was held which for the first time offered the opportunity of agreeing on a globally accepted and scientifically founded classification.

The aim of this study was to present the latest classification of periodontal diseases and to recommend it to epidemiologists, scientists and clinicians, working in the field of periodontology.

CLASSIFICATION OF PERIODONTAL DISEASES according to the 1999 International Workshop for Classification of Periodontal Diseases and Conditions in Oak Brook (Illinois, USA), 30. 10. 1999 to 2. 11. 1999. The first international workshop on classification of periodontal diseases (6).

Following intensive discussions based on a comprehensive review of literature a decision was made on a new classification of the diseases. The following classification of periodontal diseases was proposed:

1. Gingival diseases (G)
2. Chronic periodontitis (CP)
3. Aggressive periodontitis (AP)
4. Periodontitis as a manifestation of systemic diseases (PS)
5. Necrotizing periodontal diseases (NP)
6. Periodontal abscesses
7. Periodontitis with endodontic lesion
8. Developed and acquired deformations and conditions

I. Gingival diseases (G)

A. Gingival diseases caused by plaque

1. Gingivitis exclusively caused by plaque
 - a. With no local modifying factors
 - b. with local modifying factors (see VIIIA)
2. Gingival diseases modified with systemic factors
 - a. connected with hormonal influences

- 1) gingivitis connected with puberty
- 2) gingivitis connected with the menstrual cycle
- 3) connected with pregnancy
 - a) gingivitis in pregnancy
 - b) pyogenic granuloma
- 4) gingivitis connected with diabetes mellitus
- b. connected with blood disease
 - 1) gingivitis connected with leukaemia
 - 2) other diseases
3. Gingival diseases modified by application of medications
 - a. gingival diseases caused by medications
 - 1) gingival growths caused by medications
 - 2) gingivitis caused by medications
 - a) gingivitis connected with oral contraceptives
 - b) other medications
 4. Gingival diseases caused by malnutrition
 - a. gingivitis due to lack of vitamin C
 - b. others

B. Gingival lesions not induced by plaque

1. Gingival diseases of specific bacterial aetiology
 - a. lesions connected with *Neisseria gonorrhoeae*
 - b. lesions connected with *Treponema pallidum*
 - c. lesions connected with streptococci
 - d. others
2. Gingival diseases of viral aetiology
 - a. infection with the herpes virus
 - 1) primary herpetic gingivostomatitis
 - 2) recurring oral herpes
 - 3) varicello zoster infection
 - b. others
3. Gingival diseases of fungal aetiology
 - a. infection with candida
 - 1) generalised gingival candidiasis
 - b. linear gingival erythema
 - c. histoplasmosis
 - d. others
4. Gingival diseases of genetic aetiology

- a. inherited fibromatosis of the gingiva
- b. others
- 5. Systemic diseases which manifest on the gingiva
 - a. changed mucous membrane
 - 1) lichen planus
 - 2) pemphigoid
 - 3) pemphigus vulgaris
 - 4) erythema multiformis
 - 5) lupus erythematosus
 - 6) caused by medications
 - 7) others
 - b. allergic reactions
 - 1) material in restorative dentistry
 - a) mercury
 - b) nickel
 - c) acrylic
 - d) others
 - 2) reaction to:
 - a) toothpaste
 - b) mouthwashes
 - c) additives in chewing gum
 - d) nutritive substitutes
 - 3) others
- 6. Traumatic lesions (iatrogenic, accidents)
 - a. chemical
 - b. physical
 - c. thermal
- 7. Reaction to foreign bodies
- 8. Not otherwise defined

II. Chronic periodontitis (CP)

A. Localised

B. Generalised

III. Aggressive periodontitis (AP)

A. Localised

B. Generalised

IV. Periodontitis as a manifestation of systemic diseases (NP)

A. Connected with blood diseases

- 1. Acquired neutropenia
- 2. Leukaemia
- 3. Others

B. Connected with genetic disorders

- 1. Family or cyclic neutropenia
- 2. Down's syndrome
- 3. Leucocyte adhesive deficiency syndrome
- 4. Papillon-Lefevre syndrome
- 5. Chediak-Higashi syndrome
- 6. Histiocytosis or eosinophilic granuloma syndrome
- 7. Glycogen storage syndrome
- 8. Infantile genetic agranulocytosis
- 9. Cohen's syndrome
- 10. Ehlers-Danlos syndrome, type IV and VIII AD
- 11. Hypophosphatasia
- 12. Others

C. Not otherwise defined

V. Necrotizing periodontal diseases

A. Necrotizing ulcerous gingivitis (NUG)

B. Necrotizing ulcerous periodontitis (NUP)

VI. Periodontal abscesses

A. Gingival abscess

B. Periodontal abscess

C. Pericoronal abscess

VII. Periodontitis with endodontal lesions

A. Combined para-endo lesion

VIII. Developmental and acquired deformation and conditions

A. Localised dental factors which encourage plaque, caused by gingivitis / periodontitis

- 1. Anatomy of the teeth
- 2. Reconstruction of teeth/effect of the device
- 3. Fractured root
- 4. Resorption of roots and (cement pearls)

B. Mucogingival deformities and relations in the tooth vicinity

- 1. Recession

- a. facially and orally
- b. approximally
2. Lack of gingival keratinization
3. Shortened gingival attachment
4. Localisation of the tongue or lip frenulum
5. Gingival enlargement
 - a. Pseudo-pockets
 - b. Irregular development of the gingival edge
 - c. Excessive gingival presentation
 - d. Gingival enlargement (see I.A.3. and I.B.4.)
6. Abnormal staining

C. Changed mucous membrane on an edentulous ridge

1. Loss of vertical or horizontal bone dimension
2. Loss of gingiva, i.e. keratinized tissue
3. Gingival growths, i.e. of soft tissue
4. Abnormal localisation of the tongue or lip frenulum
5. Reduced vestibulum depth
6. Abnormal staining

D. Occlusal trauma

1. Primary occlusal trauma
2. Secondary occlusal trauma

When the new classification is analysed essential differences can be seen compared to the classification of 1989, which was used in previous years (7). Contrary to the former classification, which did not include gingival diseases, the new classification classifies them in two groups: gingival diseases caused by plaque and those not caused by plaque (8,9).

The term "adult periodontitis (AP)" has been changed to "chronic periodontitis (CP)". The term AP was the cause of constant dilemma for clinicians, due to the fact that this type of periodontitis can also be found in adolescents. Consequently, the term "adult" was completely unsuitable with regard to the age of such subjects. The term CP, therefore, is more suitable as it is not limited by the age of the patient. Some of the characteristics of CP are:

- Generally occurs in adults but can also occur in children and adolescents.
- Periodontal destruction is clearly related to local irritating factors.
- Frequent presence of subgingival plaque.
- Microbial composition of the plaque varies.
- Usually of slow progression, with possible active recurrence.
- May be further classified on the basis of distribution and degree of severity.
- May be associated with a local specific factor, particularly iatrogenic irritation.
- May be modified or associated with systemic diseases (e.g. diabetes mellitus or HIV-infection).
- May be modified with risk factors, e.g. tobacco smoking and emotional stress.

With regard to involvement CP is divided into "localised" when it involves less than 30%, and "generalised" when it involves more than 30% of the affected area. Based on the degree of severity and loss of attachment (CAL), CP may be mild (CAL = 1-2mm), moderate (CAL = 3-4mm) and advanced (CAL > 5mm) (10).

The term "Early-onset periodontitis", which was used earlier (AAP 1989 and the European Classification 1993) and which included different periodontal diseases in young people (prepuberty, juvenile, rapid progressive periodontitis), has been changed to "aggressive periodontitis" (AP) (11). Some of the characteristics of AP are:

- Apart from periodontitis patients are clinically healthy.
- Tissue destruction is rapidly progressive.
- Significant frequency in the family.
- Disparity between the amount of the bacterial deposit and the extent of tissue destruction.
- Increased number of bacteria of the genus *Actinobacillus Actinomycetemcomitans*, and in some populations *P. gingivalis*.
- Abnormal phagocytic function.
- Hyperreactive phenotype macrophage with increased PGE₂ and ILβ production.
- Tissue destruction may be self-limiting.

AP can be localised and generalised. The localised form commences during puberty, involving first the molars and the central incisors, and has

a high antibody titer against the verified bacteria. The generalised form occurs in patients younger than 30 years, with loss of attachment of at least three teeth, apart from the first molars and central incisors. There is acute exacerbation and the antibody titer against the verified bacteria is low.

The new classification no longer contains "refractory periodontitis", and ulceronecrotic periodontitis has been changed by the term "Necrotizing Periodontal Diseases" (12,13). Other categories have also been added, "Periodontal Abscesses", "Periodontitis with Endodontal Lesions" and "Developmental and Acquired Deformations and Conditions (14,15,16).

Conclusion

At first sight the new classification appears complicated and too comprehensive, particularly from the clinical aspect. However, some of the former classifications which looked much simpler were frequently unsuitable and confusing to use. The new classification of periodontal diseases has on the whole removed the dilemma with regard to some terms and has thus facilitated application in practice. As previously remarked neither is this classification ideal. However, it is the first time that a group of internationally acknowledged experts have produced a generally accepted and scientifically founded classification of periodontal diseases.