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Challenges in Applying the 2017 Periodontal Classification in Diverse Populations: Insights from Morocco

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Abstract

Periodontal diseases are multifactorial conditions due to their numerous modifying and aggravating factors. Their diagnosis becomes particularly challenging in the absence of a proper classification system, which would allow clinical parameters to be confronted with recent scientific and epidemiological data. Over the years, the understanding of the nature of periodontal diseases has evolved in line with advances in medical research. Nevertheless, debate surrounding classification systems persists. The 2017 classification of periodontal diseases established by the American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP) aimed to address the limitations of the Armitage classification published in 1999. However, some aspects of this classification may be difficult to apply in specific contexts, such as in Morocco, where the previous distinction of aggressive periodontitis (AgP) as a separate category remains clinically relevant.

Keywords: Periodontal Diseases, Periodontitis, Antimicrobials, Aggressive Periodontitis, Clinical Diagnosis, Morocco.

INTRODUCTION

Since the 20th century, several classification systems for periodontal diseases have been developed to define the various periodontal pathologies. These classifications have been revised and adjusted over time in accordance with scientific and clinical advances in periodontology, highlighting the importance of regular updates to integrate new developments. The classification of the Armitage Published in 1999 described all pathologies and abnormalities of the gingival and mucosal tissues of the oral cavity [1].

However, despite its contributions, the Armitage system presented several limitations [2]:

- Significant overlap among the different categories of periodontal conditions.
- A lack of distinctions based on pathophysiology between various periodontal disease categories.
- Diagnostic imprecision and difficulties in its clinical application.

In 2017, a global workshop organized by the American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP) introduced a new classification of periodontal and peri-implant health and disease [2]. This more precise and coherent approach aligns with the principles of precision medicine, thereby contributing to a more individualized patient management. The classification aimed to identify clinical entities using clear criteria and to link diagnosis with prevention and treatment. The overarching goal of this approach is to advance toward precision and personalized dentistry on a population-wide scale [3].

Impact of the 2017 Classification of Periodontal and Peri-Implant Diseases

The 2017 classification represented a major advance in the conceptualization of periodontal health, introducing a framework composed of three subclasses. With respect to gingivitis, the system delineates two distinct categories: dental biofilm-induced gingivitis and non-dental biofilm–induced gingival conditions [4].

Several unresolved issues from the preceding classification were re-evaluated, including the presence and diagnostic interpretation of gingival inflammation and the operational definition of gingivitis.

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Consensus was reached that bleeding on probing (BOP) should constitute the principal diagnostic parameter establishing the threshold for gingivitis. Consequently, it is acknowledged that periodontal health and gingival inflammation in a reduced periodontium may both be observed following successful periodontal therapy.

Furthermore, in cases of periodontitis, the 2017 framework facilitated patient management by supporting a standardized treatment approach, although this aspect properly belongs to the treatment domain rather than the classification itself. Similarly, it provided clinicians with substantial guidance in identifying factors contributing to the complexity of periodontal disease [5]. The primary objective of the 2017 classification is to coherently assess the current severity of periodontal involvement and its implications for treatment planning. Periodontitis is now conceptualized as a pathological process characterized by variable patterns of extent, progression, and severity. Accordingly, the classification also evaluates the rate of periodontal destruction in relation to the degree of bone loss and patient age, allowing for more accurate treatment planning. Radiographic bone loss, host-microbiological determinants, and environmental factors were likewise incorporated [6,7].

Necrotizing periodontal diseases are now associated with impaired host immune responses and continue to be recognized as a distinct category of periodontitis. Conditions affecting the periodontium have been clarified, including those arising from systemic disorders, periodontal abscesses, endo-periodontal lesions, and occlusal forces. It is established that periodontal abscesses contribute to susceptibility to periodontal disease. All abscesses involving the periodontal tissues are now subsumed under the term periodontal abscess, which is classified according to etiology and the patient's history of periodontitis [8,9].

The classification also acknowledges the role of developmental or acquired conditions affecting teeth or prostheses in predisposing individuals to periodontal disease. This section encompasses all factors that modify or predispose to periodontitis or to biofilm-induced gingival diseases. A new classification of gingival recession was introduced, based on the extent of interproximal attachment loss, supplemented by clinical parameters such as gingival phenotype and characteristics of the exposed root surface [8, 10].

For the first time, a classification system also addressed peri-implant diseases and conditions, providing explicit case definitions. Similarly, it delineated the defining features of peri-implant health, peri-implant mucositis, and peri-implantitis [11].

Application of the 2017 Classification of Periodontal and Peri-Implant Diseases in the Moroccan Population

The prevalence of aggressive periodontitis shows substantial global variability, as reported by Albandar & Tinoco (2002). According to Albandar & Tinoco (2002), the highest rates are observed in Africa, where prevalence is estimated to range from 0.5% to 5% [12].

In this context, Moroccan data fall within the upper end of this range. Indeed, the study conducted by [12] among schoolchildren reports a 5% prevalence of aggressive periodontitis. The authors also note that 10.1% of participants exhibited clinical attachment loss ≥ 6 mm, indicating the presence of advanced forms of the disease within this young population [15-17].

More recent work by Kissa *et al*. (2022) confirms that the prevalence rates observed among Moroccan adolescents and young adults are among the highest reported in national surveys worldwide [14]. Students attending public schools in the country thus present higher levels of prevalence and severity of periodontal diseases compared with those described in other populations of the same age [13, 14].

In Morocco, the diagnosis of periodontal diseases has traditionally been based on the Armitage (1999) classification, which distinguished periodontitis into chronic and aggressive forms and provided therapeutic guidance, particularly regarding antibiotic regimens tailored to aggressive periodontitis. However, the application of the 2017 classification to the Moroccan population makes it more challenging to formulate specific recommendations concerning antibiotic use, due to the disappearance of the distinct category of aggressive periodontitis.

Several studies nevertheless support the relevance of maintaining aggressive periodontitis as a distinct clinical entity. The systematic review by Montenegro *et al*. (2020) reports that thirteen studies identified *Aggregatibacter actinomycetemcomitans* (A.a) in cases of aggressive periodontitis, whereas none detected it in chronic periodontitis [15]. This substantial microbiological difference reinforces the hypothesis of a specific etiopathogenic role of *A.a* in aggressive forms.

Similarly, Fine *et al*. (2019) demonstrated that localized aggressive periodontitis differs markedly from chronic periodontitis, both microbiologically and clinico-immunologically [16]. It is characterized by a highly virulent microbial profile, a hyper-reactive neutrophilic response, and a preferential involvement of incisors and first molars. Its early onset, rapid progression, and significantly higher prevalence (up to tenfold) in populations of African or Middle Eastern origin, often associated with strong familial aggregation, further confirm its distinct nature.

At the microbiological level, localized aggressive periodontitis is characterized by the predominance of highly virulent bacterial species. In the Moroccan population, *Aggregatibacter actinomycetemcomitans,* particularly the JP2 clone has been consistently identified as a key etiological agent, exhibiting enhanced leukotoxic activity that enables evasion of host defenses and direct destruction of periodontal tissues [17,18]. This clone produces high levels of leukotoxin A, which selectively targets neutrophils and macrophages, leading to dysregulated immune responses and facilitating rapid connective tissue and alveolar bone breakdown. Importantly, the presence of JP2-positive *A. actinomycetemcomitans* is not commonly detected among all aggressive periodontitis cases, suggesting that disease expression results from complex microbial interactions rather than from a single pathogen alone [18]. Accordingly, studies in Moroccan cohorts have demonstrated that aggressive periodontitis-associated biofilms frequently harbor additional anaerobic Gram-negative species, including *Porphyromonas gingivalis*, *Tannerella forsythia*, *Prevotella intermedia*, and *Fusobacterium nucleatum*, which may act synergistically to enhance virulence, biofilm stability, and inflammatory potential [19]. These polymicrobial communities differ both qualitatively and quantitatively from those observed in chronic periodontitis, reinforcing the concept that localized aggressive periodontitis is driven by a distinct microbial architecture characterized by early colonization with highly pathogenic variants and an increased capacity to disrupt host–microbe homeostasis [19,20].

These considerations fuel the ongoing debate regarding the use of antibiotics as adjuncts to mechanical therapy. Recent recommendations by Sanz *et al*. (2020) advise against their systematic use in periodontitis and restrict antibiotic therapy to generalized stage III forms in young adults [21,22]. Other authors indicate that systemic antibiotics are primarily beneficial in specific targeted situations: persistence of clinical attachment loss after mechanical therapy, confirmed aggressive forms, acute periodontal infections, or the presence of systemic comorbidities that increase susceptibility, such as diabetes [23].

According to the systematic review by West *et al*. (2025) evaluating the performance and implementation of the new classification, there appear to be limitations to its use, particularly when classifying borderline cases [24].

Given its clinical, microbiological, and evolutionary characteristics, aggressive periodontitis should be recognized as a distinct subcategory of periodontitis. Its often silent onset combined with rapid progression underscores the need for systematic screening and early diagnosis—both essential conditions for optimizing the effectiveness of non-surgical periodontal therapies, especially when combined with targeted antibiotic regimens.

It also appears essential to strengthen the development of evidence-based recommendations regarding antibiotic therapy in order to provide precise guidance for prescription protocols. To this end, we propose the development of practical and definitive guidelines clearly describing the indications for antibiotic prescription in cases of early aggressive periodontitis. Once established, adherence to and rigorous implementation of these recommendations should be subject to continuous monitoring to ensure harmonization and optimization of patient care.

CONCLUSION

The 2017 periodontal classification proposed by the AAP and EFP represents a major advancement, providing a more comprehensive and evidence-based framework. Although more complex than the 1999 system, its adoption will require a period of adaptation as well as progressive integration into clinical practice and education. It also calls for a renewed clinical reasoning approach to refine diagnosis and case definition. Future advances in understanding the etiology and natural history of periodontal diseases will help strengthen this model and may lead to further refinements of the classification.

Conflicts of Interest

The author reports no conflicts of interest.

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