CONTENTS

Preface Frank A. Scannapieco

Etiology and Pathogenesis of Periodontal Diseases Dimitris N. Tatakis and Purnima S. Kumar

eases are dental plaque-induced gingivitis and chronic periodontitis. The last 10 to 15 years have seen the emergence of several important new findings and concepts regarding the etiopathogenesis of periodontal diseases. These findings include the recognition of dental bacterial plaque as a biofilm, identification and characterization of genetic defects that predispose individuals to periodontitis, host-defense mechanisms implicated in periodontal tissue destruction, and the interaction of risk factors with host defenses and bacterial plaque. This article reviews current aspects of the etiology and pathogenesis of periodontal diseases.

Epidemiology and Risk Factors of Periodontal Diseases Jasim M. Albandar

Periodontal diseases are chronic inflammatory disorders encompassing destructive and nondestructive diseases of the periodontal supporting tissues of teeth. Gingivitis is a nondestructive disease ubiquitous in populations of children and adults globally. Aggressive periodontitis is characterized by severe and rapid loss of periodontal attachment often commencing at or after the circumpubertal age and is more prevalent among Latin Americans and subjects of African descent, and least common among Caucasians. Chronic periodontitis is a common disease and may occur in most age groups, but is most prevalent among adults and seniors worldwide. Approximately 48% of United States adults have chronic periodontitis, and similar or higher rates have been reported in other populations. Moderate and advanced periodontitis is more prevalent among the older age groups, and rates of 70% or more

The two most prevalent and most investigated periodontal dis-

xi

have been reported in certain populations. Chronic and aggressive periodontitis are multifactorial diseases caused primarily by dental plaque microorganisms, and with important modifying effects from other local and systemic factors. The study of the significance of demographic, environmental, and biologic variables is important for risk assessment and the control of periodontal diseases.

Systemic Effects of Periodontal Diseases

Frank A. Scannapieco

A number of studies suggest an association between periodontal disease and cardiovascular disease, pulmonary disease, diabetes, and pregnancy complications. Presently, the data must be regarded as preliminary. Additional large-scale longitudinal epidemiologic and interventional studies are necessary to validate these associations and to determine whether the associations are causal. The goal of this article is to review the history of this concept, describe the biologically plausible circumstances that may underlie these potential associations, and provide a summary of the published literature that supports or refutes them.

Diagnostic Biomarkers for Oral and Periodontal Diseases

Mario Taba, Jr, Janet Kinney, Amy S. Kim, and William V. Giannobile

This article provides an overview of periodontal disease diagnosis that uses clinical parameters and biomarkers of the disease process. This article discusses the use of biomarkers of disease that can be identified at the tissue, cellular, and molecular levels and that are measurable in oral fluids such as saliva and gingival crevicular fluid. Biomarkers identified from these biologic fluids include microbial, host response, and connective tissue-related molecules that can target specific pathways of local alveolar bone resorption. Future prospects for oral fluid–based diagnostics that use microarray and microfluidic technologies are presented.

Prevention of Periodontal Diseases

Andrew R. Dentino, Moawia M. Kassab, and Erica J. Renner

The ultimate goal of periodontal disease prevention is to maintain the dentition over a lifetime in a state of health, comfort, and function in an aesthetically pleasing presentation. This article focuses on primary and secondary periodontal disease prevention as they relate to gingivitis and periodontitis. Risk assessment, mechanical plaque control, chemical plaque control, current clinical recommendations for optimal prevention, and future preventive strategies are discussed.

573

533

Nutrition and Periodontal Disease

Robert E. Schifferle

This article discusses general concepts of nutrition and provides an overview of the current understanding of the relationship between nutrition and periodontal disease.

Nonsurgical Approaches for the Treatment of Periodontal Diseases

Maria Emanuel Ryan

This article reviews nonsurgical approaches for the management of periodontal diseases. A brief review of the pathogenesis of periodontitis allows the reader to identify the potential points of intervention. Assessment of risk factors for periodontitis and the potential for risk reduction are introduced as the first part of a three-pronged approach to therapy. Antimicrobial approaches, including the use of mechanical therapy, antiseptics, and antibiotics, are described next. Host modulatory therapy is addressed as the final component of the nonsurgical approach to periodontal therapy. Clinical applications of these nonsurgical options are presented as part of the treatment strategy.

Periodontal Regeneration Techniques for Treatment of Periodontal Diseases

Hom-Lay Wang and Jason Cooke

The ultimate goal of periodontal therapy is the regeneration of structures lost to disease. Conventional surgical approaches such as open-flap debridement offer only limited regeneration potential. Currently, surgical procedures for predictable regeneration of periodontal tissues are being developed, analyzed, and employed in clinical practice. This article addresses current trends in periodontal regeneration. Various materials/agents such as bone replacement grafts, barrier membranes, and biologic modifiers currently used for the regeneration of periodontal infrabony and furcation defects are discussed.

Peri-implantitis

Björn Klinge, Margareta Hultin, and Tord Berglundh

The risk of developing peri-implantitis seems to be more pronounced in patients with a history of periodontitis. Pretreatment to eliminate periodontal pathogens from the patient's oral cavity before dental implant treatment therefore is important to reduce the risk of peri-implantitis. Smoking has been shown to be a negative risk factor for treatment success. Several protocols have been used in the treatment of peri-implantitis. Mechanical infection control following surgical flap procedures, particularly in conjunction 611

with antimicrobial therapy, is the most successful concept. There is no reliable evidence that suggests which intervention is the most effective for treating peri-implantitis. This article includes background information on the biology of tissue-destructive periodontitis and peri-implantitis to help clinicians interpret the clinical manifestation of the risk for peri-implantitis.

Future Treatment and Diagnostic Strategies for Periodontal Diseases

Howard C. Tenenbaum, Henri Tenenbaum, and Ron Zohar

Many new technologies have been developed or are being developed that could enhance the ability to diagnose, predict, and treat periodontitis. Newer treatment strategies may allow clinicians to achieve limited or more robust regeneration of the periodontium. New or refreshed approaches to disease control are being pursued that will benefit those suffering from chronic periodontal disease. In addition to novel therapeutics, there has been increasing focus on the development of more sensitive and specific diagnostic tests for periodontal diseases. Such tests will allow the clinician to determine whether a patient has active disease and what sort of attachment loss might be expected if the patient is not treated. By developing newer diagnostic tests, it also may be possible to detect and monitor active disease during therapy.

Index

695