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CONSIDERATIONS ON THE ROLE OF PROSTHETIC RISK FACTOR IN PERIODONTAL DISEASE

FRATILA, A[nca] M[aria]; BOITOR, C[ornel] G[heorghe]; STANCIU, L[iana]; SABAU, M[ariana] & SEBESAN, V[oicu]

Abstract: *We have selected out of 595 patients (they have been selected out of the assisted solicitation) with ages between 20 – 60 years, with different forms of periodontal affectation, 198 patients who presented fixed prosthetic restorations with periodontal iatrogenic potential, where have followed to: show the presence of iatrogenic factors, periodontal status, the quality appreciation of the fixed prosthetic restorations in connection with the marginal periodontium, the correlation of the clinical aspects with radiographic elements for the prediction of the form, the grade of affectation of the bone periodontium and the elucidation of the etiopathogenesis mechanisms. It noted the interrelation pathogenic relationship between prosthetic iatrogenic factors (direct and indirect) with implications for the function of self-healing and periodontal and general reactivity.*
Key words: *prosthetic, iatrogenic, periodontal, risk factors*

1. INTRODUCTION

In the last century, numerous studies have attempted to discover the etiology of periodontal disease. Now we know that there are specific pathogenic bacteria forming a biofilm at or above the gingival margin. Supragingival irregularities such as crowns, tartar, crooked teeth, incorrect or incomplete fillings causes an accumulation of bacteria and protects from the salivary enzymes and oral hygiene measures. If supragingival biofilm is not removed bacteria migrates subgingival allowing development of anaerobic bacteria. Any irregularities such as root anatomy, incorrect subgingival margins of restoration will lead to accumulation of bacteria in the gingival ditch epithelium and encouraging development of subgingival plaque (Matthews & Tabesh, 2004). While these iatrogenic factors may colonize long without causing disease if there is bacterial and microbial factors periodontal may appear tissue destruction (Socransky & Haffajee, 1991). Literature studies have shown that cervical adaptation of improper fixed prostheses, exaggerated subgingival positioning of the fixed prostheses edge, crude prosthetic surfaces and over outline restorations surfaces are capable of contributing to localized periodontal inflammation (Knoernschild & Campbell, 2000). Subgingival margins of dental restorations are associated with plaque accumulation and local periodontal lesions (Schätzle et al., 2001).

Prognosis of fixed dentures depends largely on the relationship which he established with marginal periodontium, „symbiotic relationship“ or a „mutual protection relationship“ (Bratu & Nussbaum, 2006). Any restoration that does not comply with certain morphological elements in relation to the marginal periodontium coating (restoring proximal contact, aperture, crown shape, cervical marginal adaptation) and periodontal support (harmonious occlusal reports) may have periodontal iatrogenic potential. Also prosthetic restoration will be compromised if it applicable on teeth with periodontal problems, even if the prosthetic piece is performed correctly (Bratu & Nussbaum, 2006). The report between fixed prosthesis and marginal periodontium was the subject of many studies, being in the attention of both prosthetists and periodontists.

2. AIM AND OBJECTIVES

Detection of prosthetic iatrogenic factors with periodontal risk on a group of patients with fixed prosthetic restorations, to analyze and to systematize the pathogenic mechanisms and correlations with the cases observed in the research.

By knowing the role of prosthetic risk factor in periodontal disease, the pathogenic mechanisms, the response of the periodontal tissue, there are underlined the ways of prevention of prosthetic risk factor and removal of their pathogenic effect.

3. MATERIAL AND METHOD

We have selected, out of 595 patients with ages between 20–60 years with different forms of periodontal affectation, 198 patients who presented fixed prosthetic restorations with periodontal iatrogenic potential. We was interested in emphasizing the presence of the iatrogenic factors, the periodontal modifications which appear especially in the irritation area, indexes of oral hygiene and of the periodontal inflammation degree, the appreciation of the prosthetic restoration quality comparing to the marginal periodontium, the correlation of the clinical aspects with radiographic elements (retroalveolar Xrays, OPT) for analyzing the shape, the affecting degree of the periodontium bone, and the unraveling of the ethiopathogenetic mechanisms.

4. RESULTS

Dental plaque is present at all 198 patients with maladapted periodontal fixed prosthetic restorations and strengthens the action with the iatrogenic prosthetic factors (maladapted cervical edge, occlusal, proximal, the incorrect relation of the bridge-body to the crest, irritation given by the material used in the restoration of the prostheses).

To ascertain a meaningful association in the class of the 35's – 50's and the incidence of periodontal afflictions ($p< 0,001$) as an effect of maladapted fixed prosthetic restorations, and these fit in the clinical typical forms of the periodontal disease (gingivitis, superficial and profound periodontitis) where we can associate manifestations of occlusal trauma.

The periodontal disease among patients with maladapted prosthetic restorations is more frequent to women than to men which can be explained through the general field of the women with periods of physiological endocrine disturbances (pregnancy, menstruation, menopause) because the women are more interested in the esthetic aspect coming more often to the doctor which implies a higher percentage of iatrogenic therapeutic maneuvers.

We have noticed a higher incidence of the cardiovascular diseases and of the metabolic afflictions as systemic factors

associated to the periodontal disease in patients with prosthetic restorations with periodontal iatrogenic potential.

The iatrogenic factors are in a mutual conditioning relationship with implications in the self-sustaining and periodontal reactivity, an expression of the general reactivity.

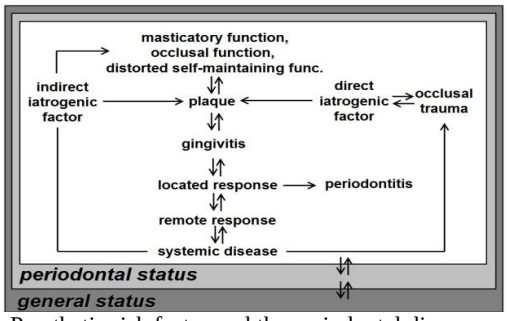

Fig. 1. Prosthetic risk factor and the periodontal disease

5. DISCUSSION

Risk factors for and indicators of periodontitis were classified so: presence of bacteria (actinobacillus actinomycetemcomitans, bacteroides forsythus, porphyromonasgingivalis, treponemadenticola), heredity, race, ethnicity, advanced age, compromised host defense, systemic diseases, diabetes, stress, history of periodontitis, inadequate margins on crowns and dental restorations, poor oral hygiene, male gender, tobacco smoking (Drisko, 2000).

We described in an original representation (Fig. 1.) the pathogenic correlations in the periodontal disease referring to the area factor - general and periodontal reactivity, the direct and indirect prosthetic iatrogenic factors, the occlusal and masticator dysfunction, the distorted self-maintenance function as bias for local–regional factors together with the microbial factor from the dental plaque, as follows:

- Direct iatrogenic prosthetic factor with periodontal risk (iatrogenic prosthetic restorations by cervical margins axially and transversally maladapted long with the violation of the biological space, wide, through incorrect axial vestibulary oral and proximal outlines over contoured, under contoured) promotes retention and secondary accumulation of plaque along with triggering of pathogenic phenomena in superficial periodontium. The periodontium responds to the aggression of the bacterial dental biofilm through inflammation, the moment of evolution and of inflammatory extension in the periodontium support tissues, marking the transformation of the gingivitis and superficial chronically marginal periodontitis into deep chronically marginal periodontitis.
- Indirect prosthetic iatrogenic factor with periodontal risk (interferences and premature contacts, blockage, breach of the principles of functional occlusion) favors the installation of traumatic occlusion with triggering of periodontal pathogenic manifestations in the profound periodontium. The traumatic occlusion causes a trauma which spreads to all the elements of the dental-maxillary apparatus (periodontium, dental tissues, the neuromuscular, the articular system) following the abnormal inter-occlusal or dysfunctional relations, but the periodontal inflamatory disease only appears as a nosological entity by adding the microbial factor.
- Accumulation and mutual stimulation of the pathogenicity of prosthetic direct and indirect risk factors with amplification of periodontal lesions.
- Relationship between direct and indirect prosthetic iatrogenic factor for occlusal and self maintaining function. The incorrect prosthetic restorations (due to the dental and periodontal pain, the morphological modifications, the lack of the contact point, the inefficient mastication, the dental interferences, the pathological mobility) cause the installation of the exclusively unilateral mastication avoiding the mastication on the hemyarcade with the maladapted prosthetic restoration. The iatrogenic irritation (direct and indirectly) changes the functionality of the masticator cycle, altering the function of self-maintenance which favors the accumulation of microbial plaque in the incorrect prosthetic restored hemyarcade. The co factorial pathological process (inflammation and occlusal trauma) appears in the gingival irritations caused and maintained by the deficient marginal adaptation of the aggregation elements to which the traumatic solicitation of the supporting teeth is added their association leads to mutual intensification with more complex and serious final lesions.
- Relationship between prosthetic iatrogenic factors and general status and periodontal reactivity. The stomatognatic system possesses a specific homeostasis subordinated to the general one through a feedback mechanism, the individual biological period through the constitutional and acquired predisposition, the age and sex influencing the periodontal tissue response. The periodontal inflammatory processes are aggravates by the general afflictions as diabetes, metabolic disturbances, stress and, in return, a periodontal infection can increase the risks among those suffering from myocardial infarct, it aggravates a preexisting diabetes, or leads to complications during pregnancy .
- Inter-conditioning between prosthetic iatrogenic factor with implications in occlusal, chewing and self-healing function and general and periodontal reactivity.

6. CONCLUSIONS

The fixed prosthetic restorations which changes the morphology of dental crowns and occlusal reports generates clinical situations considered as risk factors in etiopathogenesis of periodontal disease.

General condition and periodontal reactivity are interrelated with prosthetic risk factor forming a pathological unit which influencing the adaptive capacity of periodontium.

By understanding the prosthetic risk factor etiopathogenic mechanisms in periodontal disease are clarified some of the ways of obtaining a favorable prognosis prosthetic restoration.

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