ASSESSMENT OF LOCAL RISK FACTORS IN THE ETIOLOGY AND EVOLUTION OF PERIODONTAL DISEASES

Moisei Mihaela¹, Ionel Dan Cristian¹*, Dimofte Alina Ramona¹, GG Condurache²

¹`Dunărea de Jos` University of Galati - Faculty of Medicine and Pharmacy
2.Economist, Private Practice, Iasi, Romania

*Corresponding author: Ionel Dan Cristian, e-mail: dan.ionel@ugal.ro

Abstract

The etiological concept in the context of periodontal disease is of major importance because both prophylaxis and therapy are based on the knowledge of the interrelation between the etiological factors and the pathogenesis of these diseases. The purpose of the study was to identify the local, irritating and functional predisposing factors involved in the etiology and evolution of periodontitis. Material and Method: The group included 520 patients, 21-60 years old from Galati County. Clinical and radiological examinations have identified local factors and their correlation with age and periodontal status. Periodontal evaluation included the periodontogram, oral hygiene and inflammation. Results: The obtained values are: calculus - 75% with an incidence of 43.6% between 20-30 years; dental caries - 55.76% with 41% incidence at 20-30 years; smokers - 36.53%, incidence 42% between 20-30 years, dental malpositions -34.61% incidence 55% at 20-30 years; Incorrect obturations -25.36%; improper prosthetic -15.88%, 37% incidence 30-40 years; high insertion frenches - 21% with a 15% incidence at 30-40 years. Conclusions: most of the underlying factors are involved in one of the periodontal diseases.

Key words- favorable factors, periodontal disease

INTRODUCTION

Periodontal disease is today a real public health issue with a prevalence of 20-50% of the world’s population, with 11.2% being severe. [7,8] During the last years, remarkable progress has been made in understanding the causal factors associated with the occurrence of periodontal diseases and it has been clearly established that these diseases are, by their nature, infectious and occur in the presence of supra and subgingival bacterial plaque deposits. [6] At the same time, a number of local contributing factors have been identified that contribute to the disease process initiated by microorganisms in the plaque, and are also referred to as local risk factors. They are represented by calculus, carious lesions
especially those located in the vicinity of the gingival margin, smoking, dental malpositions, defective fillings, inappropriate prosthetic, edentations. [3] Knowing, identifying and eliminating them is the key to effective prophylaxis and the success of a periodontal treatment.

AIM

The purpose of this study was to evaluate periodontal status in a batch of patients and to identify local contributing factors in initiating and maintaining periodontal disease. Preventing periodontal infection is a complex and integrated process that includes risk assessment, medical history and dental history, assessment of personal habits, patient values and expectations. The results obtained on the basis of the collected data provide the basis for an individualized treatment plan to reduce the risk of periodontal disease and promote oral health.

MATERIAL AND METHOD

520 patients, 330 women and 190 men, aged 21-60 years, who were presented at the private practice during 2017-2018, were selected for study. They were divided into four groups, namely 20-29 years, 30-39 years, 40-49 years and 50-59 years. A clinical examination was performed by inspection, palpation, percussion and periodontal survey. The oral hygiene status was determined by the plaque index and the calculus index. All local factors contributing to the emergence of different forms of periodontal disease were found and quantified according to age and gender. Periodontal status was established by correlating clinical data with imaging exams, retroalveolar radiographs and orthopantomographies. To assess the degree of periodontal inflammation, papillary bleeding indices and gingival index were determined.

RESULTS AND DISCUSSION

Of the 520 patients, 440 had a periodontal disease, 290 cases with gingivitis and 150 with periodontitis. (fig.nr.1)
The assessment of oral hygiene led to the following results: for the plaque index, 270 of the subjects had grade 1 and 140 grade 2. In terms of the calculus index, the maximum number of patients was recorded for grade 1-240, the grade 2 -100 patients, and grade 3 - 5 patients (Fig.2). For periodontal status, the values are: for the papillary bleeding index, the highest number of people was observed - 170 at grade 1 and the lowest for grade 4 with 40 persons. Most cases at the gingival index were for grade 2, 210 persons and the lowest number, 70 persons for grade 3.

Fig nr. 2 Batch distribution based on index values used

Fig nr.3 Distribution by age group in function of the positive factor

The investigation of local contributing factors in relation to age groups shows the following:

- In the age group 21-29 years, the most frequent risk factors were dental malpositions with 55.6% and calculus - 43.6%.

- in the 30-39 age group, the most common local factors were smokers with 42.1% and improper fillings 30.8%.

- in the 40-49 age bracket, the local favoring factors with a higher percentage were found in those with non-adapted adjacent gnathoprotective devices 37.5% and inadequate fillings 23.1%.

- In the 50-60 age group, the most common risk factors were non-adapted adjacent gnathoprotective devices - 50% and edentations - 41.7%.
The analysis of the contributing factors by gender, shows that in men the most frequent local factors were: edentations with 58.3%, smoking 52.6% and calculus 51.3%, and the least observed factors were carious lesions with 31.03% and improper fillings of 46.2%.

In women, the most frequent risk factors were: carious lesions with 69% and improper fillings by 53.9%. Edentation and smoking were among the fewest factors encountered in women. (Fig.nr.4)

![Fig.nr.4 The incidence of local factors favoring gender](image)

The correlation of local favors with the periodontal pathology shows that gingivitis identified: calculus - 80 patients, inadequate fillings - 30, prosthetic works - 30, smokers - 60, and dental malposition - 30 patients.

Local factors contributing to periodontitis were: calculus- 40 cases, prosthetic works - 30, smokers - 50, and dental malposition - 30 patients (Fig.5) Thus, it was noted that each factor present had its role in the initiation and the evolution of periodontal disease.
Fig. nr. 5 Distribution of cases with periodontal disease depending on the favoring factor

**Discussions**

Calculus, as a local favourite factor, was found in 75% of the patients included in the studied group, which exceeds the data from the specialized literature, respectively 36-63% in the developing countries. [10] It is predominant in males 51%, 29-30 years 42% and predominantly in gingivitis 26.5% versus periodontitis 10.26%.

Dental caries with a prevalence of 2.5 billion people globally [9] have been identified as a periodontal risk factor due to the favorable condition they pose to plaque retention, by maintaining chronic inflammatory and hyperplastic reactions, especially in cervical and proximal locations. The proportions of 56% in the studied group was found to be close to the 60% average reported by the literature. [10] It was more common in women - 69%, the most affected age was 20-29 years and was identified in the case of gingivitis - 17%.

Smoking, the so-called silent killer, with an incidence of 26% in the batch - surpassed the European average(26%), and even the one in Romania(28%), according to data reported by the Eurobarometer in 2017. [5] Gender share of 52% among men and the most affected age was 30-39 years - 42%. The link between smoking and periodontal disease has been demonstrated by numerous epidemiological studies demonstrating the negative effects on implicit local immune responses in disease progression. [1, 10-22] The results of the study come to confirm these aspects, identifying as favoring factors in gingivitis - 32% and in periodontitis - 26%.

Dental malpositions have a significant global prevalence of 25% in the US and 37% at European level [4]. In the study, the 34.6% showed a lower prevalence than reported data for Romania, namely 45-75%. [2] Specialty data show that vicious dental positions create favorable conditions for plaque and calculus deposits by inducing pathological changes in periodontal tissues. Within the analyzed group, malpositions were identified in 26.7 in periodontitis and 16% in gingivitis. The predominant age for
which was found was 20-29 years - 55.6%, the similarity being by gender.

Conclusions

The majority of investigated patients presented changes in periodontal structures of intensity correlated with the type of local incriminated factor and duration of action. The predominant local risk factor was calculus that causes a mixed, bacterial and mechanical irritation of the periodontium, with a worsening of the periodontal pathology. A higher incidence of local factors was observed in males.

The basic pillars in promoting periodontal health are health education for optimal oral hygiene, elimination of local contributing factors and monitoring of patients through periodic checks.

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