Original Research Article

Periodontal, demographic and systemic condition characteristics of patients treated at a dental school

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Abstract

Introduction and objective: The aim of this study was to evaluate the relations among: age, reasons for dental appointment, systemic conditions, use of medicines and periodontal disease, in patients assisted in the Periodontal Clinic at the Dental School of the Center of Higher Education of Campo Gerais (short *Cescage* – Ponta Grossa, Brazil), during 2007-2009. **Material and methods:** A total of 183 dental files were obtained and 100 were included in the study. The following tests were applied: student t, Mann-Whitney (quantitative variables) and Qui-square (χ^2) (qualitative variables). The level of significance adopted was of 5%. **Results:** The main reason for dental appointment was not the need of periodontal treatment, but tooth pain and dental aesthetics. In relation to the systemic condition, women presented more systemic alterations in comparison with men, showing higher prevalence of diabetes and hypertension. In relation to the drugs, only 20% of men used systemic drugs, while 52% of women used them. Dental plaque showed similar percentage between genders, but bleeding on probing was lower in women. Concerning to periodontal disease the prevalence of pocket probing depth (until 4 mm) was equivalent in both genders, and the buccal area of the mouth showed a higher prevalence than the labial area. Considering

periodontal pocket probing depth (7 mm or more), the result was similar in both genders and the buccal area of the mouth showed higher prevalence that the labial area. **Conclusion:** Anamnesis and clinical examination accomplished in the periodontal clinic can establish some demographic, clinical and systemic disease patterns related to the presence of the periodontal disease in patients seeking treatment at dental school clinics.

Introduction

The record on clinical file of data coming from periodontal, anamnesis, and complementary examinations (radiographs) both at the private office and at high education institutions represents the axis not only of the juridical legality of dental treatment, but also the basis that enable the dentist evaluates the patient's systemic health, dental state, and mainly the oral disease diagnosis such as periodontitis and oral cancer, which will allow an adequate prognosis and efficient and appropriate treatment. Additionally, according to Palat (1990) [14], the correct filling in of the clinical files may enable the dentist to defend yourself properly against lawsuits, especially those sustained by false information provided by lawyers and patients. It may also technically justify either possible failures or deficiencies in dental treatment, for example, by describing the presence of systemic diseases which modify the host's response.

In Periodontics, the correct record of information on clinical charts is still more crucial because the prevention and treatment of periodontal disease depends on both a correct diagnosis and proper prognosis. The diagnosis, at the early stages, of periodontal diseases as gingivitis which begin between 14 and 21 days of dental biofilm accumulation enable a safer and more efficient treatment [11, 12]. Systematic and meta-analysis studies on the prevalence of periodontal diseases have demonstrated that these constitute a serious oral health problem. At its more advanced stages, periodontal disease is considered the most responsible for natural tooth loss [4].

The aim of this study is to evaluate the clinical files of patients to detect the presence and type of existing periodontal disease, as well as to verify the presence of risk factors such as altered systemic condition and the use of medicines to correlate them with gender and age. Additionally, the study aimed to identify some elements of the periodontal and systemic profile correlated to demographic data (gender and age) of the patients undergoing periodontal treatment at the Center of High Education of Campos Gerais (short Cescage),

in Ponta Grossa (Parana, Brazil), through clinical record analysis.

Material and methods

In this study the clinical files of patients who had sought for treatment at the Periodontics Clinic of the Dentistry School of the Center of High Education of Campos Gerais (Cescage), Ponta Grossa (Parana, Brazil), between 2007 and 2009 were evaluated. A total of 183 files were examined. Exclusion criteria included incomplete files, files filled in incorrectly or with unintelligible information. The data of each patient was registered in the study's records comprising information on gender, age, systemic condition, and use of drugs. Also specific periodontal data were considered: percentage of visible plaque, bleeding on probing, probe depth and tooth mobility.

Data analysis was performed considering the following variables: age, reason of the appointment, systemic condition, use of drugs, percentage of visible plaque, bleeding on probing, areas displaying sites up to 4 mm and higher than 7 mm and tooth mobility. The comparisons were conducted according to gender (male and female). The following statistical tests were applied: Student t, Mann-Whitney (quantitative variables) and Chi-square (χ^2) (qualitative variables). The level of significance was set at 5% and the software SPSS (Statistical Package for the Social Science, 17.0 Windows version, SPSS Inc. Chicago, Illinois, USA) was used.

Results

The analysis of the patients treated at the Discipline of Periodontics of the Center of High Education of Campos Gerais (short Cescage), Ponta Grossa (Parana, Brazil) was conducted based on gender (male and female). A total of 83 files was excluded because they met one or more exclusion criteria. The results are seen in table I.

Concerning to the mean age of the participants, there was an equivalence between genders, ranging from 38 to 50 years-old.

There was not statistically significant difference between genders regarding to the appointment reason. In both genders, the main reason of the appointment was not the need of periodontal treatment; other factors such as tooth pain and aesthetics prevailed. This result demonstrated that 86% of the women and 82% of the men had sought the periodontics clinic because of other problems instead of periodontal treatment.

Concerning to the systemic condition, there were statistically significant differences between male and female. Women presented more systemic alterations than men. Of the total of treatments, 56% of the systemic alterations were presented in women, while 32% were shown in men. The diseases and the most frequent risk factors were type II diabetes, smoke, and hypertension.

The same result was observed for the use of drugs. Women used more systemic drugs than men. It was verified that only 20% of the men, while 52% of the women used some type of drug. The most frequent were pain killers and anti-inflammatory/ antihypertensive, and hypoglicemiant drugs.

The percentage of visible plaque was similar between groups (68% for women and 77% for men). Bleeding on probing was higher in male (44%) than in female (32%), with statistically significant differences (p=0.006).

The verification of the clinical periodontal condition showed that the probing depth prevalence (4 mm – light periodontitis [17]) was similar in both genders. Buccal area of oral cavity showed the highest prevalence of light periodontitis than the labial area. Regarding to probing depth higher than 7 mm or more (moderate/advanced periodontitis [17]), both genders displayed a similar behavior. The buccal area of the oral cavity also showed the highest prevalence than labial area. Concerning to the presence of tooth mobility, the results demonstrated the same behavior between genders. Most of the participants did not present tooth mobility.

Table I – Characteristics o patients who sought for treatment at the Periodontics Clinic of Cescage from 2007 to 2009

Variables	Gender		P value
	Female (n=50)	Male (n=50)	
Age (mean ± standard deviation)*	38.34 ± 11.15	38.94 ± 11.39	0.791 ns
Reason of appointment[†]			
Periodontal treatment	7 (14%)	9 (18%)	0.786 ns
Others	43 (86%)	41 (82%)	
Systemic condition[†]			0.044 s
Without alterations	16 (32%)	28 (56%)	
Hypertension	7 (14%)	3 (6%)	
Diabetes	10 (20%)	6 (12%)	
Smoke	7 (14%)	10 (20%)	
Two or more factors	4 (8%)	0 (0%)	
Others	6 (12%)	3 (6%)	
Use of drugs[†]			0.007 s
None	24 (48%)	40 (80%)	
Anti-hypertensive	10 (20%)	2 (4%)	
Hypoglicemiants	6 (12%)	3 (6%)	
Pain-killers	1 (2%)	4 (8%)	
Contraceptives	5 (10%)	0 (0%)	
Others	4 (8%)	1 (2%)	

Visible plaque[#] **(mean ± standard deviation)**	68 ± 27%	77 ± 21%	0.157 ns
Bleeding on probing[#] **(mean ± standard deviation)**	32 ± 20%	44 ± 22%	0.006 s
Areas with sites of 4 mm[†]			0.763 ns
Labial	18 (36%)	21 (42%)	
Buccal	32 (64%)	29 (58%)	
Areas with sites of 7 mm[†]			0.541 ns
Labial	22 (44%)	18 (36%)	
Buccal	28 (56%)	32 (64%)	
Presence of mobility[†]			1.000 ns
Absence	37 (74%)	36 (72%)	
Presence	13 (26%)	14 (28%)	

*Student t test; [#] Mann-Whitney test
[†] χ^2 test

s – significant
ns – non significant

Discussion

Demographic and clinical studies involving Periodontics are of extreme importance for the prevention and treatment of periodontal diseases, which have understood as populational oral health problem [5]. In this sense, Santos Jr. *et al.* (2002) [18] demonstrated that patients referred for prosthetic treatment at Bauru Dental School, University of São Paulo, did not even show good periodontal conditions to undergo the rehabilitation treatment. These authors observed that 84% of the patients required any type of periodontal intervention prior to prosthetic treatment. Of these, 52% of the patients needed complex periodontal treatment (involving surgeries) and female patients presented the highest need of this type of treatment.

This study's results demonstrated that the age of both male and female patients ranged from 38 to 56 years-old, confirming that this is the age group which more assiduously search for treatment in Periodontics. There was no statistically significant difference between genders regarding to search for treatment. These data were different from those found by Gusmão *et al.* (2005) [8]. These authors affirmed that 71 (39%) participants who had sought for treatment in dental schools were male and 113 (61%) female. On the other hand, Abreu and Oliveira (2002) [1] pointed out that most of the patients treated at the dental schools clinic were female whose main occupation was student and housemaid/housewife.

Concerning to the appointment reason, there was no difference between genders. Accordingly,

Machion *et al.* (2000) [12] affirmed that this reason is also called "chief complaint". The most prevalent causes summarized by the authors were: tooth pain; need of tooth restorations, periodontal treatment and tooth prosthesis. The authors pointed out that many patients use tooth pain as chief complaint to achieve a faster treatment. These data coincide to our study regarding tooth pain as the appointment reason, but they are different because those authors included periodontal treatment as an important motive for dental appointment. In this present study, we expected that the appointment reason would be related to periodontal alterations such as gingival bleeding, tooth mobility, halitosis, etc., but other factors were predominant: tooth pain and need of tooth aesthetics. Bandéca *et al.* (2011) [3] demonstrated that one of the problems affecting early periodontal diagnosis is that the patient's self-perception is poorly related to the actual existing periodontal indexes; therefore it is highly recommended that educational initiatives and preventive strategies be developed for adult population. The activity of undergraduate students in Dentistry Schools represents a highly positive paradigm in this preventive/educational process.

We aimed to detect the presence of alterations and systemic diseases in this study's patients because they are risk factors and interfere in both diagnosis and treatment of periodontitis. According to Kim and Amar (2006) [10], systemic alterations as diabetes, cardiovascular, immunological, and hormonal affections as well as other disturbances, despite not being determining etiological factors

for periodontal disease, may alter the disease's path and accelerate the pre-existing inflammatory process, increasing the loss of clinical periodontal insertion and the tissue destruction which includes the alveolar bone. This study's results demonstrated that women show markedly higher alterations and systemic diseases than men. The most frequently found diseases and risk factors were type II diabetes, smoke and hypertension. Accordingly, Gusmão et al. (2005) [8] observed that hypertension was the most prevalent systemic alteration, reaching 18%, which corroborates the findings of Moraes et al. (1993) [13] and Peralta et al. (1995) [15]. However, in this present study, type II diabetes followed by smoke surpassed the occurrence of hypertension. This is important because, in 1993, the periodontal disease was identified as the sixth diabetes complication; and in 1997, the Report of the Expert Committee on Diagnosis and Classification of Diabetes Mellitus affirmed that periodontal disease was one of the most frequent pathological conditions found in diabetic adults [9].

Hypertension is still an important risk factor; as a "silent disease", it is several times forgotten both by the dentist and the patient. Desvarieux et al. (2010) [6] showed data that evidenced the direct relationship among the levels of subgengival bacteria and systolic and diastolic blood pressure as well as the prevalence of hypertension. These authors studied 4,533 samples of subgengival biofilm (mean of seven samples per participant), which were quantitatively evaluated for 11 periodontal bacteria and correlated with risk factors as blood pressure. Also, they concluded that chronic infections as periodontal disease predispose the patient to heart diseases.

Concerning to systemic diseases as Acquired Immunodeficiency Syndrome (AIDS), the results demonstrated the absence of this disease in the patients participating of the study. It is likely that these data occurred because AIDS is only identified by anamnesis and the patients not always feel safe in reporting their condition as positive HIV, fearing prejudice.

Additionally to systemic factors, this study aimed to detect the use of drugs by patients. These systemic drugs may induce periodontal alterations, especially in the conjunctive tissue structure. The following drugs are well-known examples in Periodontics: sodium dilantin (phenytoin), indicated for cerebral dysrhythmia; cyclosporin A , immunosuppressive drug indicated to reduce the rejection of kidney and liver transplants; and nifedipine, a blocker of calcium channels indicated

for hypertension and cardiovascular alterations. All these drugs, among others when continuously used, may lead to the gingival increasing or growth, general reported as gingival hyperplasia [19].

This study's result indicated that women (52%) used more systemic drugs than men (20%) and the most used drugs were pain killers, anti-inflammatory, anti-hypertensive and hypoglicemiant drugs (with emphasis to metformin – which reduces the production of glucose in the liver). We did not observe, however, the use of drugs causing hyperplasic periodontal alterations such as the aforementioned ones.

In this study, the percentage of visible plaque and bleeding on probing were separately recorded. Both genders showed similar percentage of visible plaque (women = 68%; men = 77%), however, bleeding on probing was higher in men (44%) than in women (32%). These numbers represented high levels regarding the plaque presence related to the mean of recommended gingival health (up to 10-15% of plaque index); the maximum plaque index is 30% [21]. The presence of high health-disease process descriptors as the percentage of visible plaque and bleeding on probing may be attributed to different factors, among them there is the "momentary presence of plaque" [16], reason by which the aforementioned descriptors do not condemn the person to develop destructive periodontal disease. The loss of clinical insertion depends on several local, environmental, immunological and genetic factors, among which the type of microbiota within oral cavity. The classic study of Slots (1977) [20] already demonstrated that the gingival sulcus contains a small number of microorganisms, predominantly facultative gram-positive rods. Periodontal health would be the result of a balance between the microorganism and the host, and its alterations may cause local or systemic changes that decrease the host's resistance or quantitative and/or qualitative alterations of periodontal microbiota, resulting in an increasing of the virulence,

Concerning to clinical periodontal conditions, this study found periodontal pockets of 4 mm (light periodontitis) and 7 mm (moderate/advanced periodontitis), similar to the results of Sallum and Sallum (1996) [17], for both genders. For all types of periodontal disease, buccal area showed higher prevalence than labial area of oral cavity. Tooth mobility showed a similar behavior in both genders. Most of the participants did not show tooth mobility.

The presence of gingivitis and incipient/moderate periodontitis constitute common records in

Periodontics clinic [2]. These data were corroborated by this present study, in which the assessment of a relative lack of patients with advanced periodontal disease and aggressive periodontitis may be attributed to several factors, among which it is included the reduced number of participants of this study (n = 100) and their age (which reached 56 years-old in few cases). Notwithstanding, we need to considerate that the age advancement alone does not represent a risk factor for periodontitis [22], and although age may produce some clinical periodontal insertion loss, this situation may be perfectly compatible with the health and function of the stomatognathic system, where periodontium is included [7]. Accordingly, Wennström *et al.* (1993) [22] examined during 12 years the longitudinal alteration of 225 patients aging from 18 to 65 years-old. Their results showed a mean of only 0.4 of tooth lost. The percentage of gingivitis in this time period did not surpass 4% and the insertion loss was only 0.5 mm. The radiographic examinations regarding longitudinal loss of alveolar bone height reached 0.4 mm in 12 years.

Concerning to demographic data such as race, the analysis of the files indicated that almost the totality of treated patients were Caucasian (94%). Only 6% were Black and/or Brown. Yellow and Indians were not found in this present study. Such data certainly refers to the European colonization comprising Ukrainians, Russians, Poles, and Italians in the area of the city of Ponta Grossa/Parana/Brazil. Accordingly, some data demonstrated that certain populations would be at greater risk for the disease development, although periodontal disease may affect all races. For example, Americans (either from Mexican or African origin) would be more susceptible to develop periodontal disease than Americans from European ascendance. Borrell and Papapanou (2005) [5] examined the prevalence of periodontitis among race groups in the United States of America. They included in the study more than 12,000 adult patients treated by the American Health System: non-Hispanic Blacks, non-Hispanic Caucasians, and Mexican-Americans. Through multivariate analysis, it was detected that Blacks showed 1.88 higher probability to present periodontitis than Caucasians. However, the periodontitis odds ratio for Blacks and Mexican-Americans did not differ from that of Caucasians. The cause of some of these variations is still not known, but it could be related to the frequency of dentist's appointments, susceptibility for determined oral bacteria or an differentiated inflammatory response of the several race groups. This study's

results demonstrated a prevalence of incipient and moderate rather than aggressive periodontal disease. However, this does not mean that smaller indexes of periodontal diseases may be peremptorily attributed to a probable prevalence of Caucasians over other race types in this study. Furthermore, the observed population was very reduced.

Conclusion

• Most of patients treated at the dental school clinics did not show satisfactory periodontal conditions to undergo other treatments. They needed some type of periodontal intervention;

• The appointment reason was not related to periodontal alterations as gingival bleeding, tooth mobility, halitosis, etc. There is a prevalence of other factors, such as tooth pain, need of aesthetic and prosthesis; it was demonstrated that female patients showed markedly higher systemic alterations and diseases than male. The most frequent diseases and risk factors were: type II diabetes, smoke, and hypertension;

• It was verified a higher percentage of visible plaque and bleeding on probing; however, these descriptors did not condemn the patient to develop destructive periodontal disease; the affection depends on several local, environmental, immunological and genetic factors, among which is the type of the microbiota within oral cavity;

• There was relative absence of patients with advanced and aggressive periodontal disease. The cause may be attributed to the reduced number of this study's participants and their age. However, the age advancement alone may not represent a risk factor for periodontitis; women used more systemic drugs than men, and the most frequently used drugs were pain killers, anti-inflammatory, anti-hypertensive, and hypoglicemiant drugs.

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