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Periodontal Treatment and Quality of Life of Chronic Facial Pain Patients

Tratamiento Periodontal y Calidad de Vida en Pacientes con Dolor Facial Crónico

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ABSTRACT: The aim of this research is to determine the impact of periodontal treatment on the quality of life of patients with concomitant chronic headache or facial pain and periodontal disease. Thirty-eight consecutive patients with chronic periodontal disease were divided according to the presence of chronic craniofacial pain (CFP):Study Group-with CFP and Control Group-without CFP. They were evaluated with the Clinical protocol of the Orofacial Pain Clinic, the WHOQOL-bref and the McGill Pain Questionnaire. All patients received periodontal treatment. The Study Group presented worst quality of life than the Control Group. Nevertheless, the Study Group showed trend improvement in the psychological score (p=0.06) and affective descriptors at the McGill Pain Questionnaire improved (p=0.014) after periodontal treatment. There were no significant changes in quality of life from pre- to post- operatory evaluations in both groups (p>0.05). We conclued that chronic craniofacial pain sufferers presented worst score at physical and psychological domain of quality of life, however there was an improvement in their psychological state 180 days after periodontal treatment.

KEY WORDS: quality of life, periodontal disease, facial pain, headache.

INTRODUCTION

Quality of life is defined as individuals' perceptions of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHOQOL Group, 1994).

Orofacial pain is very common in the general population (Lipton *et al*., 1993). Its etiology is multifactorial and there are many possible diagnoses, including myofascial pain syndromes, neurovascular disorders, dental pain, neuralgias, temporomandibular disorders (TMD), atypical facial pain, etc. (International Classification of Headache Disorders, 2004; Zakrzewska, 2004). These patients usually receive multiple treatments and are often misdiagnosed, and for the assessment, special training of health care professionals is necessary because of overlapping of signs and symptoms of these multiple diagnosis (Fricton *et al*., 1982; Marbach, 1996). It is much more common when the pain symptom is persistent or considered atypical facial pain (Siqueira *et al*., 2004; Nobrega *et al*., 2007), and patients with chronic pain have more complaints of physical and psychiatric co-morbidities, central sensitization and neuroplastic changes (Nóbrega *et al*., 2007; Sessle, 2000; Ren & Dubner, 2002).

Periodontal disease (PD) is a group of frequent chronic inflammatory diseases at the adult population (Albandar & Rams, 2002; Ministério da saúde, Secretaria de Atenção à Saúde, 2003; Bartold *et al*., 2000), characterized by gingival and/or alveolar bone infection (Bartold *et al*.), with different levels of severity (American Academy of Periodontology, 2000).

It is generally painless, except during mechanical irritation (chewing or teeth brushing) or acutization periods, and patients have gingival bleeding, dental mobility and growing tooth sensation (Lundy & Linden, 2004). Experiences like "gum swelling", "gum pain", "gum recession", "dental mobility", "dental inclination", "halitosis" and dental pain are associated with PD and

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with poor quality of life (McGrath & Bedi, 2001; Needleman *et al*. 2004). Several studies demonstrated its envolvement with cardiovascular, metabolic, or neurovascular diseases (Amar *et al*., 2003; Tonetti *et al*., 2007; Yamazaki *et al*. 2004). Despite the existence of these studies there is a lack of papers about the role of untreated chronic PD in patient sufferers of chronic headache or facial pain (CFP), maybe because it is not routinely evaluated during medical assessment of chronic pain(Siqueira *et al*.).

A central focus of dental care is to improve the quality of life, to increase survival (absence of oral cancer, presence of teeth) and enable appropriated physical, emotional and social functioning at normal daily tasks (McGrath & Bedi). Therefore, recent studies showed an interaction between the immune system and pain, also at the trigeminal system (Xie *et al*., 2006), but until now there are no studies about chronic PD in chronic pain sufferers, despite its infectious and inflammatory nature.

Thus, the aim of this study was to verify the quality of life characteristics before and after periodontal treatment of patients with PD and concomitant CFP.

MATERIAL AND METHOD

Patients that had concomitant CFP (Headache Classification Subcommittee of the International Headache Society) and chronic PD (American Academy of Periodontology) were seleted and received periodontal treatment comparatively with another group of patients that had only PD and sought attendance for routine dental evaluation. All the patients gave informed consent to procedures approved by the Ethics Committee of the Medical School.

The CFP (headache or facial pain) patients were referred to the Orofacial Pain Clinic for evaluation because of non improvement of pain. They were referred by the Interdisciplinary Pain Center of the Neurology Division of Hospital das Clínicas of the Medical School of the University of São Paulo (EDOF-HC), from June 2003 to July 2005.

Patients were divided into two groups:

1. Study Group: sufferers of chronic craniofacial pain with concomitant PD.
2. Control Group: patients with only PD.

Were included patients with PD, in accordance with the classification criteria of the American Academy of Periodontology, and only for Study Group: patients with CFP (Merskey & Bogduk, 1994).

Patientes with presence of chronic systemic diseases that did not fit into the attendance protocol used in this study, psychiatric patients with cognitive deficiency, pregnant women, epileptic patients, hematological diseases or tumors of the head and neck were excluded.

Instruments of evaluation. A standardized diagnostic protocol was applied to all patients equally by an experienced and trained dentist. It consisted of an interview and systematic evaluation of cervical, cranial, facial, dental and other oral structures in accordance to the following instruments or specialized exams:

1- The Clinical Protocol of the Orofacial Pain Clinic, a standardized orofacial pain evaluation to detail: (a) the chief complaint, (b) the general pain characteristics (location, intensity, quality, duration, time of pain worsening) (c) the presence of headache or body pain complaints, (d) the oral and dental condition and (e) the medical history.

2- WHOQOL Questionnaire in the validated Portuguese version to assess quality of life (Fleck *et al*., 2000).
3- McGill Pain Questionnaire in the validated Portuguese version only for patients with CFP (Study group).

Periods of evaluation. All patients were evaluated in two periods:
1.- Baseline, before periodontal treatment (up to 15 days before);
2.- 180 days (6 months) after the end of periodontal treatment, completing a follow-up of 6 months.

Statistical analysis. Data were analyzed by parametric and non-parametric tests. The Fisher and Chi-squared tests were used to compare the nominal data, such as, sex, race and presence of co-morbid conditions. To compare weight, height and Body Mass Index between the groups we used the T student's test. Variations in the mean WHOQOL scores intergroup were explored with Mann-Whitney non-parametric test and variations in WHOQOL scores intragroup were assessed with the Wilcoxon test. Changes in descriptors of the McGill Pain questionnaire were examined with the Wilcoxon test. The level of significance was 5%.

RESULTS

Forty patients with chronic periodontal disease were assessed and treated. Two patients did not fulfill criteria and were excluded, the remaining 38 patients, 08 men e 30 women, with a mean of 45.38±12 years old (range to 28–73 y). The Study Group, which included patients with CFP, was composed by 4 (20%) men and 16 (80%) women and the mean ages were 48.95±13.03 years old (28–73 y). The Control Group was composed by 4 (22.2%) men and 14 (77.8%) women with a mean age of 42.38±9.51 years old (29–62 y). There was no statistical difference between the two groups in relation to these parameters, showing homogeneity between them. The general characteristics are presented in Table I.

Co-morbidities. The Study Group showed 19 (95%) patients that had one or more co-morbidities, and the Control Group showed 11 (61.1%) patients with these findings. There was a significantly higher percentage of co-morbidities in the Study Group (Fisher exact test, p = 0.016).

Quality of life. In all domains evaluated there were no significant differences between baseline scores and scores at 180 days after periodontal treatment in both groups. The data show, however, the following interesting findings:

Physical Domain. There was a significant difference between the groups at the baseline score (non-parametric Mann-Whitney test, p<0.001) and at 180 days after periodontal treatment (non-parametric Mann-Whitney test, p = 0,006). The Study Group showed significantly lower scores than those of the control group in both evaluations.

Psychological Domain. There was a significant difference between the groups in the initial score (non-parametric Mann-Whitney test, p = 0.007), however there was no difference at 180 days after periodontal treatment (non-parametric Mann-Whitney test, p = 0.217). The Study Group showed significant lower scores than the Control Group at the baseline. These differences disappeared 180 days after periodontal treatment.

Social Relationships Domain. There was no significant difference between the groups at the baseline score (non-parametric Mann-Whitney test, p =0.290) or at 180 days after the periodontal treatment (non-parametric Mann-Whitney test, p =0.251).

Environment Domain. There was no significant difference between the groups at the baseline score (non-parametric Mann-Whitney test, p =0.828) or at 180 days after periodontal treatment (non-parametric Mann-Whitney test, p =0.633). These data are demonstrated in Table II

For the question "How satisfied are you with your health?" the groups did not differ at the baseline (p = 0.081, Fisher's test) but differed at 180 days after periodontal treatment (p = 0.020, Fisher's test). At the Study Group, there was significant change in health satisfaction (McNemar's test p = 0.025), where 31.4% of the cases that were not satisfied at baseline became satisfied after treatment. We also observed it in 71.4% of the Control Group (McNemar's test p=0.025).

McGill pain questionnaire. Descriptors of pain according to the McGill Pain questionnaire for the Study Group are shown in Table III. Patients had an improvement in affective indexes descriptors (p = 0.024 p = 0.014, respectively).

Table I. Demographic characteristics of patients with periodontal disease of the Study and the Control Groups

	Study group (n= 20)	Control group (n= 18)	p
Sex	F = 16 M= 4	F = 14 M = 4	1.000_
Race	B = 15 N = 5	B = 10 N = 08	0.207_
Age (mean) ±SD (Minimum–Maximum)	48.9±13.0 (28-73)	42.4±9.5 (29-62)	0.0878_
Weight ±SD (Minimum–Maximum)	65.9±13.63 (43-90)	61.8±12.5 (45-93)	0.3409_
Height ± SD (Minimum–Maximum)	1.61±0.07 (1.5-1.77)	1.61±0.1 (1.5-1.8)	0.8083_
BMI±SD (Minimum–Maximum)	25.11±4.43 (17.9-35.4)	23.7±3.83 (22.7-32.8)	0.3134_

∂= Fisher's Test; ∑= Chi-Square Test; ∏= Student t Test; SD= standard deviation.

Table II. Evaluation of the quality of life at the Study (headache and facial pain) and the Control (only periodontal disease) groups in physical, social, psychological and environment domains of the WHOQOL Questionnaire.

Domains	Groups	Moment	Mean	p*	p**
Physical	Study	Baseline	11.95±3.12	0.252	<0.001[1]
		180 days	12.50±3.99		
	Control	Baseline	15.67±1.78	0.709	0.006[2]
		180 days	15.83±2.26		
Social	Study	Baseline	13.25±3.75	0.293	0.290[1]
		180 days	14.15±3.05		
	Control	Baseline	14.33±3.83	0.165	0.251[2]
		180 days	15.22±2.69		
Psychological	Study	Baseline	12.40±2.56	0.060	0.007[1]
		180 days	13.70±2.92		
	Control	Baseline	14.72±2.19	0.928	0.217[2]
		180 days	14.67±2.38		
Enviroment	Study	Baseline	11.90±2.34	0.757	0.828[1]
		180 days	12.10±3.24		
	Control	Baseline	11,61±2.97	0.182	0.633[2]
		180 days	12,28±2.63		

* p= comparative intragroup at baseline and 180 days after periodontal treatment (non-parametric Wilcoxon test).
**p= comparative intergroup at baseline (1) and 180 days after periodontal treatment (2) (non-parametric Mann-Whitney test).

Table III. Pain descriptors and indexes by the McGill Pain Questionnaire.

McGill Pain Questionnaire	Baseline	(Mean)	180 days	(Mean)
Sensorial Index_	17.2±7.31	(6–32)	13.35±8.89	(0-33)
Affective Index_	6.4±3.56	(0–11)	4.2±4.32	(0-13)
Avaliative Index_	2.7±1.45	(1–5)	1.9±1.44	(0-5)
Miscelaneous Index[4]	6.25±3.87	(0–14)	4.35±3.99	(0-16)
Sensorial descriptors[5]	7.3±2.79	(2–10)	6.05±3.28	(0-10)
Affective descriptors[6]	3.8±1.64	(0–5)	2.5±2.03	(0-5)
Avaliative descriptors[7]	1.0±0.00	(1–1)	0.85±0.36	(0-1)
Miscelaneous descriptors[8]	2.85±1.22	(0–4)	2.15±1.35	(0-4)

Wilcoxon Test: ∂p=0.059; ∑p=0.024; ∏p=0.040; 4p=0.082; 5p=0.076; 6p=0.014; 7p=0.083; 8p=0.041.

DISCUSSION

Although there were no statistically significant changes intragroups in quality of life, it is interesting that the psychological domain showed difference between groups at 180 days, compared to baseline (p = 0.007 and p = 0.217, respectively). The reason for that is the psychological improvement of patients suffering from chronic craniofacial pain after periodontal treatment (p = 0.060). This date can be enhanced by the improvement in the affective indexes and descriptors of the questionnaire McGill of pain (p = 0.024 and p = 0.014, respectively).

On the other hand, physical scores in both moments of evaluation were different between groups (p <0.001 and p = 0.006, respectively), which means that the physical debilitation of patients with chronic headache and facial pain is worse than the control patients, independently of periodontal disease. It is known that patients with chronic pain have more tendency to have physical and / or psychiatric co-morbidities (McWilliams *et al*., 2003), especially this group in this study, which are patients referred because of non improvement during earlier treatments.

These data suggest that the control of periodontal disease and concomitant improvement in oral health brought some emotional comfort for patients suffering from craniofacial chronic pain. The reasons for this improvement are not clear and we cannot discard the placebo effect because of frequent contact with the dentist during treatment, but it had not been evaluated. The care received may have influenced the improvement in some emotional aspects (body image, appearance, self-esteem, positive and negative feelings), which did not occur in other aspects (thinking, learning, memory, concentration and spirituality / religion / personal beliefs). Moreover, the dental treatment is associated with perceptions of health and quality of life. Patients understand that the health of their mouth often affects their quality of life by symptoms and signs produced, especially those patients with the experience of chronic pain.

Experiences like "gum swelling," "gingival pain", "gingival retraction," "dental mobility", "bad breath" and " tooth pain " are associated with a reduction in quality of life (McGrath & Bedi; Needleman *et al*.). Thus, the perception of health improvement after periodontal treatment, in this study, reinforces these data in the literature. There was partial improvement of the degree of satisfaction with the health of patients 180 days after periodontal treatment. When asked about the degree of satisfaction with health, we observed that in both groups there was a significant change (McNemar's test p=0.025). It is probably due to oral health perception after treatment.

The scores of social relations and environment domains didn't change nor were different between groups. Possibly, all patients in this sample had similar values, aspirations, and concerns, perhaps because they are from a single sample (all patients treated at the Hospital das Clinicas). It is controversial with other studies that demonstrated affection in all quality of life domains for patients with chronic pain. Exercises, domestic activities, food, family and social relationships are often compromised by the painful condition (Teixeira & Yeng, 2006). In Brazil, more than 1 / 3 of the population feels that chronic pain declines usual activities and more than 3 / 4 believe that chronic pain limits recreational activities, social and family relations (Teixeira & Yeng).

In conclusion, these data showed that there was an improvement at the emotional aspects of chronic craniofacial pain sufferers after periodontal treatment in comparison to baseline. The affective indexes and descriptors at the McGill Pain Questionnaire also reduced, which reflected in quality of life.

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RESUMEN: El objetivo fue determinar el impacto del tratamiento periodontal sobre la calidad de vida de los pacientes con cefalea crónica concomitante o dolor facial y enfermedad periodontal. Treinta y ocho pacientes consecutivos con enfermedad periodontal crónica fueron divididos de acuerdo a la presencia de dolor craneofacial crónico (CFC); grupo de estudio con CFC y el grupo control, sin CFC. Fueron evaluados con el protocolo clínico de la Clínica del Dolor Orofacial, el WHOQOL-bref y el cuestionario de dolor McGill. Todos los pacientes recibieron tratamiento periodontal. El grupo estudio presentó peor calidad de vida que el grupo control. No obstante, el Grupo de estudio mostró una tendencia de mejoría en la puntuación psicológica (p=0,06) y los descriptores afectivos en el cuestionario de dolor de McGill tambien mejoraron (p=0,014) después del tratamiento periodontal. No hubo cambios significativos en la calidad de vida de las evaluaciones pre y postoperatorias en ambos grupos (p>0,05). Concluimos que los pacientes de dolor crónico craneofaciales presentaron peor puntuación en el dominio físico y psicológico de la calidad de vida, sin embargo, hubo una mejoría en su estado psicológico 180 días después del tratamiento periodontal.

PALABRAS CLAVE: calidad de vida, enfermedad periodontal, dolor facial, dolor de cabeza.

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