Indexes of anxiety, depression and disability in patients with myofascial pain, with and without the additional diagnosis of migraine

Índices de ansiedade, depressão e incapacidade em pacientes com dor miofascial com e sem o diagnóstico adicional de enxaqueca

Rodrigo Lorenzi Poluha[1], Rafael dos Santos Silva[1], Paulo Cesar Rodrigues Conti[2], Somsak Mitrirattanakul[3], Robert Merril[4]

ABSTRACT

BACKGROUND AND OBJECTIVES: The aim of this study was to compare anxiety, depression and disability indexes in patients with myofascial pain with and without additional diagnosis of migraine.
METHODS: We included 203 patients of the Orofacial Pain Clinic of the University of California, Los Angeles, USA. Patients were over 18 years of age, both genders, with a primary diagnosis of myofascial pain. The patients were also evaluated for the presence of migraine according to the criteria of the International Headache Society. The sample was divided into two groups: 120 patients with only myofascial pain (Group 1) and 83 patients with myofascial pain and with an additional diagnosis of migraine (Group 2). The Beck Anxiety Inventory, Beck Depression Inventory and Migraine Disability Assessment questionnaires were applied. The Mann-Whitney test was used to compare the groups at a significance level of 5%.
RESULTS: Patients in group 1 presented significantly higher indexes in the Beck Anxiety Inventory (p=0.005), Beck Depression Inventory (p=0.025) and number of days lost and/or impaired (56.4 days) than those in group 2. The Migraine Disability Assessment Questionnaire scores for groups 1 and 2 were, respectively, 48% and 24.1% for grade I; 9.2% and 3.6% for grade II; 8.2% and 22.9% for grade III; and, 34.7% and 49.4% for grade IV.
CONCLUSION: Patients with myofascial pain and migraine had significantly higher anxiety, depression and disability indexes (p<0.05), as well as moderate and severe disability levels considerably higher than those with only myofascial pain.
Keywords: Orofacial pain, Migraine, Temporomandibular disorders.

RESUMO

JUSTIFICATIVA E OBJETIVOS: O presente estudo visou comparar os índices de ansiedade, depressão e incapacidade em pacientes com dor miofascial, com e sem o diagnóstico adicional de enxaqueca.
MÉTODOS: Foram incluídos 203 pacientes da Clínica de Dor Orofacial da Universidade da Califórnia, Los Angeles, EUA, com idade acima de 18 anos, ambos os sexos, com diagnóstico primário de dor miofascial. Os pacientes também foram avaliados quanto à presença de enxaqueca, segundo os critérios da Sociedade Internacional de Cefaleias. A amostra foi dividida em dois grupos: 120 pacientes com somente dor miofascial (Grupo 1), e 83 pacientes com dor miofascial e diagnóstico adicional de enxaqueca (Grupo 2). Foram aplicados os questionários: Inventário de Ansiedade de Beck, Inventário de Depressão de Beck e *Migraine Disability Assessment Questionnaire*. O teste de Mann-Whitney foi utilizado para comparar os grupos a um nível de significância de 5%.
RESULTADOS: Os pacientes do grupo 1 apresentaram índices de Inventário de Ansiedade de Beck de p=0,005, Inventário de Depressão de Beck de p=0,025, e número de dias perdidos e/ou prejudicados (56,4 dias) significativamente maiores que os do grupo 2. Os escores *Migraine Disability Assessment Questionnaire* para os grupos 1 e 2 foram, respectivamente, para o grau I de 48% e 24,1%; grau II de 9,2% e 3,6%; grau III de 8,2% e 22,9%; e, grau IV de 34,7% e 49,4%.
CONCLUSÃO: Os pacientes com dor miofascial e enxaqueca apresentaram índices de ansiedade, depressão e incapacidade significativamente maiores (p<0,05), além de níveis de incapacidade moderado e grave, consideravelmente superiores em relação ao grupo de pacientes com somente dor miofascial.
Descritores: Disfunção temporomandibular, Dor orofacial, Enxaqueca.

1. Universidade Estadual de Maringá, Departamento de Odontologia, Maringá, PR, Brasil.
2. Universidade de São Paulo, Faculdade de Odontologia, Departamento de Prótese, Bauru, SP, Brasil.
3. Universidade de Mahidol, Faculdade de Odontologia, Departamento de Oclusão, Bangkok, Thailand.
4. Universidade da Califórnia, Faculdade de Odontologia, Departamento de Dor Orofacial, Los Angeles, USA.

Correspondence to:
Rodrigo Lorenzi Poluha
Universidade Estadual de Maringá - Departamento de Odontologia
Avenida Mandacaru, nº 1.550 – Vila Santa Izabel
87080-000 Maringá, PR, Brasil.
E-mail: rodrigopoluha@gmail.com

INTRODUCTION

Orofacial pain encompasses diseases represented by temporomandibular disorders (TMD), headache and other conditions, which reduce patients' quality of life and involve billions of dol-

lars in health care annually[1,2]. TMD are musculoskeletal disorders, affecting temporomandibular joint (TMJ), masticatory muscles and associated structures[3]. Among the TMDs, myofascial pain (MFP) stands out, which singly corresponds to 45.3% of the diagnoses[4]. It is defined as regional muscle pain associated with palpation sensitivity, characterized by the presence of hypersensitive points of muscle tissue (trigger points)[1,3,5]. MFP-patients are significantly more likely to depression and anxiety when compared to patients with joint dysfunction[6]. About 55% of MFP-patients report migraine episodes[7]. Migraine is defined as a primary headache, with 4 to 72 hours attacks, and characterized by unilateral pulsatile pain of moderate to intense intensity, aggravated by routine physical activity, associated with combinations of nausea, vomiting, photophobia, phonophobia, and aura[8]. Migraine-patients are more likely to have depression (2.2 to 4.0 times) and anxiety disorders (3.5 to 5.3 times)[9].

Although MFP and migraine present distinct pathophysiologies, the masticatory muscles receive trigeminal sensory innervation, which is also responsible for the nociceptive impulses conduction of the cranial blood vessels involved in the migraine genesis, allowing a possible overlap of nociceptive stimuli in cases of comorbidities[10]. TMD-patients experience increased headache frequency and severity in addition to a 10-fold higher migraine prevalence[11]. Although it is reported that the concomitant occurrence of MFP and migraine leads to higher levels of pain at palpation, subjective pain perception and sleep/rest problems[12], studies investigating the psychological and emotional conditions in these cases are still scarce. This knowledge can contribute to the understanding of these conditions.

This study aimed to compare the anxiety, depression and disability indexes in MFP-patients, with and without an additional migraine diagnosis.

METHODS

A cross-sectional observational analytical study was carried out, following the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (Strobe)[13], in accordance with the Declaration of Helsinki. All participants signed the Informed Consent Form (ICF). Patients who presented themselves between August 1, 2005, and July 1, 2006, at the Orofacial Pain Clinic of the University of California (UCLA)'s School of Dentistry, Los Angeles, USA, complaining of facial pain were examined. The sample was calculated considering a 95% of confidence level, a sampling error of 5% and a minimum percentage of 40%, based on the MFP and migraine frequency, obtained from the pilot sample. Thus, the minimum number proposed for the analysis was 198 patients. It started with n=424 consecutive individuals, considering absenteeism and data loss, for a safety margin of the analysis.

Patients older than 18 years, both genders, primary MFP, with one or more trigger points (TP) in the masticatory and/or cervical musculature were included, according to the criteria of the American Academy of Orofacial Pain[1]. Migraine diagnosis followed the criteria of the International Headache Society[8].

Evaluations were performed by four trained examiners regarding patient examination and diagnostic criteria under the supervision of an experienced professional.

Patients with neuropathic diseases were excluded from the sample, as those with other primary headaches such as cluster headache or paroxysmal chronic headache, as well as occasional secondary headaches. Individuals with systemic conditions such as rheumatoid arthritis, fibromyalgia, among others, as well as those with mental or neurological problems were also excluded. From 424 patients evaluated, only 203 met the inclusion criteria. The remaining patients (n=221) were excluded from the following analysis. The sample was divided into two groups: patients with MFP only (Group 1) and MFP-patients and migraine additional diagnosis (Group 2).

Beck's Anxiety Inventory (BAI)[14], composed of 21 items, was used to assess the anxiety level. Patients were told to indicate, among the symptoms described, how often they were perceived during the last week, including the evaluation day. The answer sheet contained four grades: absolutely not, slightly, moderately, and severely, which actually constitute a scalar series, from zero to 3 points. The sum of the individual scores represents the total score, which could range from zero to 63. After this sum, a conversion table, standardized by the inventory, classified the anxiety level into mild (zero-21 points) moderate (22-35 points) and severe (36-63 points).

The depressive state was analyzed according to the Beck's Depression Inventory (BDI)[15], composed of a 21-items questionnaire with graded affirmations from zero to 3, reflecting the symptom's intensity. The maximum score is 63, denoting the highest level of depression. Depression levels were classified as: absent (zero-9 points), mild to moderate (10-18 points), moderate to severe (19-29 points) and severe (30-63 points).

In order to assess headache-related disability, patients were invited to answer the Migraine Disability Assessment Questionnaire (MIDAS)[16]. This questionnaire presents 7 questions, the first 5 of which determine the final score and are based on 3 activity spheres. Questions 1, 3, and 5 evaluate the number of days lost due to headache pain at school or work, homework, and social, family, and leisure activities in the last three months. Questions 2 and 4 evaluate the number of additional days, with a significant decrease in the activity (at least 50% reduction in productivity), either in paid or domestic work, in the last three months. Still, two additional questions assess the attacks frequency and the pain intensity. As these last two do not contribute to the final score, they were not included in the questionnaire in the present study. The sum of the days, reported in the first 5 test questions, ranks the individual in one of the following 4 disability degrees: absence (I: zero-5 points), mild (II: 6-10 points), moderate (III: 11-20 points) and severe (IV: >21 points).

All Inventories were used in their official English version, following their specific recommendations. The application and interpretation of these tests were done by a responsible psychologist, pain psychology specialist.

The present study was approved by UCLA's Ethics Committee on 07/27/2005.

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Statistical analysis

In order to detect possible differences between groups 1 and 2 in relation to BAI, BDI, and MIDAS, the non-parametric Mann-Whitney test was used at a significance level of 5%. All analysis in this study were performed using SPSS software version 13.0.

RESULTS

The sample consisted of 203 patients, with 181 women (89.2%) and 22 men (10.8%), with an average age of 40.3±15.44 years. Group 1 was composed of 120 patients (59.11%), and group 2 was composed of 83 patients (40.89%). Regarding the BAI and BDI levels, the averages obtained comprised both groups in the mild anxiety score and in the mild to moderate depression score. In addition, group 2 presented values statistically higher than those of group 1 (p<0.05) in both questionnaires. Table 1 presents the descriptive measures and the comparison between groups of anxiety and depression levels.

Table 1. Descriptive measures and the comparison between groups of anxiety and depression levels

	Groups	Minimum	Maximum	Average (Standard deviation)	p value
BAI	1	0	63	10.68 (10.24)	0.005*
	2	0	55	14.87 (11.5)	
BDI	1	0	55	9.79 (9.48)	0.025*
	2	7	44	12.77 (10.22)	

BAI = Beck's Anxiety Inventory; BDI = Beck's Depression Inventory; *: statistically significant (p<0.05).

The MIDAS questionnaire's results analysis showed that group 2 presented a greater number of lost and/or impaired days in relation to group 1 in all questions, with statistical significance in the first 4 (p<0.05) (Table 2). The total number of lost and/or impaired days was also statistically higher in group 2 (p <0.05). Group 2 patients lost or had their production impaired in 56.40 days and the group 1 in 35.33 days. The patients' percentage distribution in relation to the final score obtained by the MIDAS questionnaire, in each group, are shown in table 3. Absent or mild levels of disability were higher in group 1, while moderate and severe levels were higher in group 2.

Table 3. Patients' percentage distribution in relation to the final score obtained in the Migraine Disability Assessment Questionnaire in both groups

MIDAS' score	Group 1 (%)	Group 2 (%)
Absent (I)	48	24.1
Mild (II)	9.2	3.6
Moderate (III)	8.2	22.9
Severe (IV)	34.6	49.4

DISCUSSION

Pain is an individual experience of high complexity, involving different aspects of life[1]. Comparing the anxiety, depression and disability indexes, MFP-patients with an additional diagnosis of migraine presented significantly higher indexes (p<0.05) than patients with only MFP, supporting the null hypothesis rejection.

The sample consisted of 203 patients, with a woman:man ratio of 8.2:1. This proportion is expected since women seek for TMD-treatment seven times more than men[3]. This result is also close to that found by Zebenholzer et al.[17], who in their multicenter study on the depression and anxiety impact on the burden and management of episodic and chronic headaches, had their sample composed of 84.1% of women in the episodic headache's group, and 79.1% in the chronic headache's group. Still, in relation to the sample, 59.11% of the patients presented an additional migraine diagnosis, close value to 56.5% found in a study with Brazilian population[18]. Among the numerous comorbidities of painful, especially chronic conditions, including migraine and TMD, anxiety and depression are prominent due to their high prevalence and their impact[6,19]. In this study, significant differences were found in the anxiety and depression levels between

Table 2. Descriptive measures and comparison between groups of each item of Migraine Disability Assessment Questionnaire

Questions	Groups	Minimum	Maximum	Average (SD)	p value (Mann-Whitney)
1- How many days of work or school have you lost in the last three months due to your headaches?	1	0	90	3.06 (13.33)	p<0.001*
	2	0	90	6.06 (17.47)	
2- How many days in the last 3 months did you notice that your performance at work or school was reduced by half or more due to your headaches?	1	0	90	5.01 (16.63)	p<0.001*
	2	0	90	9.70 (20.91)	
3- How many days in the last 3 months have you been unable to perform homework due to your headaches?	1	0	90	9.39 (19.51)	0.009*
	2	0	90	13.24 (19.35)	
4- How many days in the last 3 months did your performance at homework was reduced by half or more due to your headaches?	1	0	90	9.99 (19.85)	0.021*
	2	0	90	15.45 (23.45)	
5- How many days in the last 3 months have you lost family, social or leisure activities due to your headaches?	1	0	90	7.93 (18.97)	0.095
	2	0	90	10.84 (20.79)	
Total	1	0	450	35.33 (65.34)	0.004*
	2	0	540	56.40 (89.83)	

SD = standard deviation; *: statistically significant (p<0.05).

the groups (p<0.05), and group 2 presented higher averages in both cases (14.87 for anxiety and 12.77 for depression) in relation to group 1 (10.68 for anxiety and 9.79 for depression). This difference can perhaps be explained by the positive correlation between pain intensity and anxiety and depression levels, that is, the more intense the pain (as in cases of concomitant comorbidities), the higher the levels of anxiety and depression[20]. Using the same assessment tools (BAI and BDI), depression anxiety scores in group 2 share the results of Santos, Sandin and Sakae[21], who found a positive correlation (p=0.031) between anxiety and the headache prevalence in Brazilian university students; and with the results of Falavigna et al.[22], who found a higher prevalence of depression (p=0.001) in Brazilian adults with headache than in those without headache.

Approximately one-third of patients with migraine and anxiety have depression signs; and two-thirds of patients with migraine and depression exhibit anxiety signs, with the anxiety and depression combination associated with a higher headache frequency and anxiety attacks related to headache intensity exacerbation[23]. However, the higher values did not mean, at least in this study, more depression and anxiety. Although statistically different, both groups were included in the mild anxiety score and the mild to moderate depression score. It can be affirmed, therefore, that group 2 presented more intense depression and anxiety symptoms, without this necessarily meaning a worse picture of depression and anxiety.

One of the most used instruments to assess headache-related disability is the MIDAS questionnaire[16,24]. It captures the headache impact over a three months period, considered long enough to represent the actual patient's experience, and short enough to allow a reliable and accurate resumption of headache's history[25]. In this research, there was no study of the results according to gender, or the presence or not of employment for this questionnaire's data, since it is not influenced by these factors[24].

After comparing the MIDAS questionnaire's results, group 2 presented significantly more disability than group 1, in four of the five questions (p<0.05). The only question that did not present significant statistics was No. 5, which measures the lost days in social, family, and leisure activities. This can be explained by the fact that patients tend to lose more days in domestic service (questions 3 and 4) than in leisure, social or family activities (question 5)[26]. In the present study, this fact was verified, with both groups having less lost days, or impaired in question 5 in relation to 3 and 4.

Although in this study the average number of days in both groups placed them on the IV score (severe disability) of MIDAS[16], the patients in group 2 lost or had their production significantly more impaired (56.40 days) in relation to group 1 (35.33 days). Total values of MIDAS are similar to previous ones in the literature, in which TMD and primary headache patients had a total of 49.3 days lost or impaired, whereas patients with only TMD had 23.42 days[27]. These results are expected since, in TMD-patients, disability is significantly increased when associated with primary headache[28]. In addi-

tion, patients in group 1 presented higher scores than those in group 2 for grades I (48 and 24.1%, respectively) and II (9.2 and 3.6%, respectively). On the other hand, group 2 presented higher disability scores compared to those in group 1 for grades III (22.9 and 8.2%, respectively) and IV (49.4 and 34.6%, respectively). The distribution in MIDAS grades in group 2 was similar to that found in the study by Di Paolo et al.[29], in an Italian population evaluating TMD and migraine (I: 28%; II: 8%; III: 8%; IV: 56%), But differs from studies of Corrêa, Santos and Galato[30] (I: 80.6%; II: 9.0%; III: 5.2%; IV: 5.2%) and from Queiroz and Silva Junior[31] (I: 55.4%; II: 18.1%; III: 13.5%; IV: 13%), with Brazilian populations. Possibly, these differences are because Brazilian studies are epidemiological and consider a larger population (not only TMD-patients), and evaluate more than one type of headache (not just migraine).

MFP and migraine alone are associated with increased levels of anxiety, depression, and disability, which exacerbate painful conditions[6,23]. The worsening of these indexes (anxiety, depression, and disability) found in group 2 (coexistence of MFP and migraine comorbidities) suggests that, clinically, the treatments of these conditions should be multiple and also include the psychological/emotional factors to obtain satisfactory results. Future studies may help clarify this issue. All the results of this research should be analyzed with caution, since there are limitations, as it is a cross-sectional, monocentric and restricted population study. It would be interesting to replicate such research, with longitudinal follow-up, in order to better understand the interrelation between comorbidities, as well as to study which patient's characteristics predisposes him or are related to a greater occurrence of the MFP and migraine concomitance.

CONCLUSION

Patients with MFP and migraine presented significantly higher indexes of anxiety, depression and number of days lost and/or impaired, as well as moderate and severe levels of disability considerably higher than the group of patients with only MFP.

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