Association Between Severity of Temporomandibular Disorders and the Frequency of Headache Attacks in Women With Migraine: A Cross-Sectional Study

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ABSTRACT

Objective: The aim of this study was to investigate the magnitude of association of the severity of temporomandibular disorders (TMDs) in women with episodic and chronic migraine.
Methods: Thirty-one women with episodic migraine (mean age: 33 years), 21 with chronic migraine (mean age: 35 years) and 32 healthy controls (mean age: 31 years) were included. The Fonseca Anamnestic Index was applied to assess severity of TMDs. TMD severity was considered as follows: no TMD (0-19 points), mild TMD (20-49 points), moderate TMD (50-69 points), and severe TMD (70-100 points). To compare the proportion of TMD severity among groups, a χ^2 test was performed. Prevalence ratio (PR) was calculated to determine the association of TMD severity and both migraine groups using the control group as the reference.
Results: Women with chronic and episodic migraine were more likely to exhibit TMD signs and symptoms of any severity than healthy controls (χ^2 = 30.26; P < .001). TMD prevalence was 54% for healthy controls, 78% for episodic migraine, and 100% for chronic migraine. Women with chronic migraine exhibited greater risk of more severe manifestations of TMD than healthy controls (PR: 3.31; P = .008). This association was not identified for episodic migraine (PR: 2.18; P = .101).
Conclusion: The presence of TMD signs and symptoms was associated with migraine independently of the frequency; however, the magnitude of the association of more severe TMD was significantly greater in chronic, but not episodic, migraine. (J Manipulative Physiol Ther 2017;40:250-254)
Key Indexing Terms: Migraine Disorders; Craniomandibular Disorder; Risk

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INTRODUCTION

Migraine is defined as a primary headache with attacks lasting 4 to 72 hours and characterized by unilateral pulsating pain of moderate to severe intensity aggravated by routine physical activity and associated with nausea, photophobia, and/or phonophobia. The most current classification considered migraines chronic when attacks occur more than 15 days per month and have the features of migraine on at least 8 days.[1] Migraine is a disabling and burdensome condition affecting 15% of the general population.[2-4] Progression to the chronic form is expected in about 2.5% of migraine sufferers.[5]

Temporomandibular disorder (TMD) includes several conditions involving the temporomandibular joint (TMJ), masticatory muscles, and their associated tissues.[6,7] Typical signs and symptoms include TMJ crepitus, limitation/deviation on mandibular opening, tenderness at the TMJ,

and distant symptoms such as pain in the neck or head, headache, and face pain being the most prevalent.[8]

The comorbidity of migraine and TMD has been well described in clinical settings and population-based research.[9-11] The migraine prevalence is 58% in participants who present at least 1 TMD symptom.[9] Rates of TMD diagnosis prevalence range from 53% to 87% in migraine suffers and it is even higher in chronic migraine (91%).[10,11] The higher prevalence of both conditions compared with headache- or TMD-free participants reinforces that the relationship between these 2 conditions is bidirectional.[12] Further, there is an overlap in clinical manifestations of migraine and TMD because both include intermittent head and face pain, with prevalence peak occurring in young and middle-aged adults, preferentially in women, with a significant influence of the hormonal cycle.[13,14] The mechanisms leading to overlap between these 2 conditions may include shared environmental and genetic factors involving abnormal nociceptive pain processing, the same nociceptive system, and presence of peripheral and central sensitization.[12,15,16]

An additional burden is expected when individuals experience both conditions.[13,17] In migraineurs, greater ictal and interictal sensitization has been reported to be a consequence of the TMD co-occurrence as indicated by more severe reports of cutaneous allodynia and significantly lower nociceptive thresholds to mechanical and heat stimulus in cephalic and extracephalic areas.[18,19] In fact, the presence of TMD is believed to be a risk factor for migraine chronification.[13-17]

Although TMD is associated with several types of headache, migraine is the most closely associated.[9,20] Nevertheless, differences between episodic and chronic migraine regarding severity of TMD signs and symptoms have not been explored. Accordingly, the objective of the present study was to describe the frequency of different severities of TMD signs and symptoms in patients with migraine and to determine the magnitude of the association of TMD severity with episodic and chronic migraine relative to healthy controls. Our hypothesis was that an association between TMD signs and symptoms and the severity of them is most common in chronic migraine.

METHODS

Participants

Women with migraine were recruited from a tertiary university-based hospital between January and October 2014 for this cross-sectional study, and the sample was defined for convenience according to the center. Patients were diagnosed following the third edition of International Headache Society criteria by an experienced neurologist.[1] Migraine features including years with disease, frequency and intensity of migraine attacks, family history, and current and past medications were collected. Individuals

with episodic and chronic migraine were included. They were excluded if they presented with any of the following: other primary/secondary headache; medication overuse headache; history of neck or head trauma (ie, whiplash); pregnancy; history of cervical pathologic condition; any systemic medical disease, such as rheumatoid arthritis or lupus erythematous; or diagnosis of fibromyalgia syndrome.

A control healthy group of women without migraine history matched by age to migraine groups was also included. Exclusion criteria for the control group were the same as for the migraine group. All participants signed the informed consent form before their inclusion in the current study. The Ethics Committee of University Hospital, Faculty of Medicine of Ribeirão Preto (Brazil) approved the study protocol (process 16692/2012).

Demographic and clinical data on the participants, including headache frequency (d/mo), pain intensity (Numerical Pain Rate Scale, 0-10), and history (years) of disease, were collected with structured questionnaires.

The Fonseca Anamnestic Index was applied to assess severity TMD. It is a 10-item questionnaire developed in Brazilian Portuguese.[21] This questionnaire is based on signs and symptoms that classify participants as follows: absence of TMD (0-19 points), mild TMD (20-49 points), moderate TMD (50-69 points), and severe TMD (70-100 points).[22] The Fonseca Anamnestic Index has been validated using the Research Diagnostic Criteria for Temporomandibular Disorders, exhibiting a high degree of accuracy with a sensitivity of 86.3% and a specificity of 91.9%.[23]

Statistical Analysis

Data were analyzed with SPSS software Version 20.0 (IBM Corp., Armonk, NY). For descriptive analysis, means and standard deviation of the data were calculated. To compare the proportion of TMD severity among groups a χ^2 test was performed. To quantify the association between severity of TMD and migraine type (either episodic or chronic), we grouped the subclassification no TMD with mild TMD and moderate TMD with severe TMD, considering the control group as reference. Then, prevalence ratio (PR) was estimated to represent the magnitude of association. A confidence interval of 95% was adopted, and $P < .05$ was considered statistically significant.

RESULTS

From 102 eligible participants with migraine who participated, 50 were excluded because of concomitant headaches (n = 19), receiving anesthetic block in the past month (n = 16), reporting previous head/neck trauma (n = 8), or unavailability to participate (n = 7). A total of 84 women were finally included: 31 patients with episodic migraine (mean age: 33; SD: 11 years), 21 with chronic