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Otological findings and other symptoms related to temporomandibular disorders in young people

L.F.O. Maciel^a, F.S. Landim^b, B.C. Vasconcelos^{c,*}^a Department of Oral and Maxillofacial Surgery, University of Pernambuco, School of Dentistry (UPE/FOP), Brazil^b Program in Oral and Maxillofacial Surgery, Department of Oral and Maxillofacial Surgery, University of Pernambuco, School of Dentistry (UPE/FOP), Brazil^c Coordinator of the Postgraduate Program in Oral and Maxillofacial Surgery, Department of Oral and Maxillofacial Surgery, University of Pernambuco, School of Dentistry (UPE/FOP), Brazil

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Abstract

In a prospective, observational study between April and November 2017 we evaluated the correlation between temporomandibular disorder (TMD), and otological signs and other symptoms in a sample of 251 patients. First, a simplified anamnestic questionnaire was applied for the diagnosis of TMD and the following symptoms were recorded: otalgia, tinnitus, vertigo, pruritus of the ear, feeling of hearing loss, fullness in the ear, headache, pain in the eye, neck pain, back pain, and dizziness. Some degree of TMD was detected in 177 of the participants (70.5%). Among the otological symptoms studied, significant associations were found with tinnitus (<0.001), ear pain (<0.001), feeling of hearing loss (<0.001), and vertigo (<0.001). There were also significant associations with non-otological symptoms, the most common being back pain (<0.001), headache (<0.001), neck pain (<0.001), pain in the eye (<0.001), and dizziness (0.001). Our findings show that the higher incidence of both otological and non-otological symptoms was associated with a progressive increase in the severity of TMD.

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Keywords: temporomandibular disorders; temporomandibular joint; signs and symptoms; otologic diseases

Introduction

The term “temporomandibular dysfunction” (TMD) comprises clinical problems that affect the temporomandibular joint (TMJ), masticatory muscles, and associated anatomical structures.^{1,2} In a systematic review, Collard et al³ established that 5% of the general population has a TMD, while only 2% seek treatment for its symptoms.

Causes commonly associated with TMD are direct or indirect trauma, cumulative and repetitive stress, poor posture, changes in the spine and ergonomic posture of the head, and psychological factors.⁴ Parafunctional habits such as bruxism and tooth clenching interfere with the anatomical and functional conditions of the stomatognathic system, and predispose to clinical symptoms in the muscles and joints.^{5,6} The signs and symptoms of TMD are related to the stage of dysfunction, and generally include pain in the masticatory muscle, and in the region of the TMJ, or both; otalgia; headache; articular sounds; and limitation or deviation of mandibular movement.⁷

The diagnosis of TMD is commonly made clinically, and imaging is essential when surgical treatment is an option.⁸ A physician who does not recognise these clinical alterations

* Corresponding author at: Department of Oral and Maxillofacial Surgery, University of Pernambuco — School of Dentistry (UPE/FOP), Av. Gen. Newton Cavalcanti, 1650, Tabatinga, Camaragibe, PE 54.753-220, Brazil.

E-mail address: belmirovasconcelos@pesquisador.cnpq.br (B.C. Vasconcelos).

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| No. | Question | Yes (10) | No (0) | Sometimes (5) |
|-----|--|----------|--------|---------------|
| 1 | Do you have problems opening your mouth wide? | | | |
| 2 | Do you have problems moving your jaw to the sides? | | | |
| 3 | Do you feel tiredness or muscle pain when chewing? | | | |
| 4 | Do you have frequent headaches? | | | |
| 5 | Do you feel pain in the neck or a stiff neck? | | | |
| 6 | Do you feel pain in the ear or in the area of the TMJ? | | | |
| 7 | Have you heard noises in the TMJ when chewing or opening your mouth? | | | |
| 8 | Have you ever noticed if you have a habit like squeezing and/or grinding your teeth? | | | |
| 9 | When you close your mouth, do you feel that your teeth do not fit together well? | | | |
| 10 | Do you consider yourself a tense or nervous person? | | | |

Calculation of the anamnestic index

(Sum of points attributed above)

| Absent | 0-15 | Mild | 20-40 | Moderate | 45-65 | Severe | 70-100 |
|--------|------|------|-------|----------|-------|--------|--------|
|--------|------|------|-------|----------|-------|--------|--------|

Fig. 1. Anamnestic questionnaire as proposed by Fonseca et al.¹³

may misdiagnose the disease, promote ineffective management of any of the conditions, and fail to provide a realistic prognosis of the planned treatment.⁹

Parker and Chole¹⁰ suggested that the relation between otological symptoms and TMD could be explained by dysfunction of the masticatory muscles in anatomical and functional proximity, and also dysfunction of the Eustachian tube and embryological relations because both structures are derived from Meckel's cartilage. The TMJ communicates with the middle ear through the petrotympanic fissure, which also carries the chorda tympani, tympanic artery, and malleolar ligament. The last connects the posterior border of the disc to the middle ear.¹¹

The coexistence of non-specific symptoms can make the treatment of TMD difficult, as they may or may not be included in the diagnosis. Among non-specific symptoms, 92% are otological manifestations including ear pain, tinnitus, vertigo, ear pruritus, and a feeling of fullness of the ear.¹²

TMD continue to be a diagnostic challenge because of the complex relations between different signs and symptoms that are or are not related to the disorder or associated structures, so our aim was to correlate the presence of otological and non-otological symptoms in patients with TMD.

Patients and methods

We made a prospective, observational study of 251 randomly selected patients with or without TMD between April and November 2017 at the Department of Oral and Maxillofacial Surgery, School of Dentistry, University of Pernambuco.

The study was approved by the Ethics Committee (Approval No. 1.998.902) and was conducted in accordance with the guidelines of the declaration of Helsinki.

First, volunteers were invited to answer the anamnestic questionnaire for the diagnosis of TMD (Fig. 1) proposed by Fonseca et al.¹³ The questionnaire contains an index that permits the classification of the degree of TMD as absent, mild, moderate, and severe. Next, all participants answered questions about the presence or absence of the following symptoms: pain in the ear; tinnitus; vertigo; pruritus of the ear; feeling of hearing loss; fullness in the ear; headache; pain in the eye, neck, or back; and dizziness.

Statistical analysis

We used IBM SPSS Statistics for Windows (version 23, IBM Corp). For descriptive statistics, the data are reported as absolute and relative frequencies, and were compared by inferential analysis using the chi squared test or Fisher's exact test, as appropriate. The margin of error used was 5%, and probabilities of less than 0.05 were accepted as significant.

Results

A total of 251 patients took part, of whom 43 ranged in age from 15 to 19 years and 208 from 20 to 32 years. Seventy-four (20 men and 54 women, 29.5%) had no symptoms; 118 (21 men and 97 women, 47%) had mild symptoms; 49 (six men and 43 women, 19.5%) had moderate symptoms; and 10 (two men and eight women, 4%) had severe symptoms. There were no significant differences among the groups ($p=0.21$).

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