95 - CORRELATION OF THE PRESENCE OF SYMPTOMS ASSOCIATED WITH TEMPOROMANDIBULAR DYSFUNCTION WITH ACTIVATION OF THE TEMPORAL AND MASSETER MUSCLES

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INTRODUCTION

The temporomandibular joint (TMJ) is the only mobile joint in the skull. It is a complex articulation to allow rotational and translational motions , due to the double articulation of the condyle (DONNARUMMAet al . , 2010) . There must be a balance between both ATM, as neuromuscular equilibrium dental occlusion and articulation for this to work properly (FIFTH 2000).

The term temporomandibular disorder (TMD) is used to describe a group of diseases that involve the masticatory muscles, TMJ and adjacent structures (AMANTEA et al., 2004). The DTM has a multifactorial etiology and is related to structural , neuromuscular, occlusal factors tooth loss ,tooth wear , poorly fitting dentures,cavities ,inadequate restorations ,among others) ,psychological (due to stress there is an increase in muscle activity that generates spasm and fatigue , parafunctional habits bruxism ,sulfonic fagia ,handhold in the jaw , digital or pacifier sucking and traumatic injury or degenerative correlations of ATM (MERRIMAN , 1999; FIFTH , 2000; PEREIRA , 2005) .

The most common signs and symptoms of TMD and orofacial head pain , TMJ sounds and limitation of jaw movement.

Fundamental for a correct indication terapêuticaé evaluation of all possible symptoms gasket mind with teamwork dentists, physiotherapists , fonoaudió logos, psychologists, otolaryngologists , neurologists and clinical pain (COAST and Guimarães , 2002) .

Any investigation about DTMs must be based,first, on muscle hyperactivity ,as changes arise at the time this hyperactivity exceed the physiological tolerance of each individual as well as the physiological tolerance of each system structure . In this context , surface electromyography (SEMG) as a tool for measuring muscle electrical activity , has numerous applications in the masticatory muscles becoming a potential link between the physical and mechanical properties , as well as sensory ratings and has been used to identify differences in the parameters between subjects with chewing dysfunction(NARDI et al . , 2010) .

Due to the high prevalence of TMD in the population (OKESON , 1992) and the importance of a correct diagnosis to treatment , the aim of this study was to correlate the presence of TMD symptoms associated with activation of the temporal and masseter muscles bilaterally through EMG .

MATERIALS AND METHODS

The study sample consisted of 20 women , aged 20 to 25 years , students . The inclusion criterion was presenting signs and symptoms of TMD according to Anamnesic Index of Fonseca , adapted from Da Fonsecaet al . (1994) (Annex 01) . We excluded subjects who had central or peripheral neurological disorders, or who have suffered trauma or tumors in the head and neck . So as not to present characteristic of TMD box according to the Index of Anamnesic Fonseca (Da Fonseca et al . , 1994) .

The Anamnesic Index Fonseca (Da Fonseca et al . , 1994) is the only existing instrument of screening in Brazilian Portuguese to classify and characterize the severity of symptoms of temporomandibular dysfunction .

The subjects answered the questionnaire Fonseca (Da Fonseca et al , 1994.) Which considered personal data and parafunctional habits related to ATM , with possible answer: No, and Yes Sometimes The history index was ranked no dysfunction (when the sum of the scores remained between 0 and 15) , mild (when the sum of the scores remained between 16 and 40) , moderate dysfunction (when the sum of the scores remained between 41 and 65) and severe dysfunction (when the sum of the scores remained between 70 and 100).

The volunteers were positioned sitting , feet on the floor , upper limbs resting on a table with the head aligned . For electromyographicanalysis , EMG (LYNX EMG1000 , Brazil) was used . Double Electrodes were placed on the surface masseter and temporalis muscles (anterior) of both sides. A reference electrode (ground) was applied to the acromion. The skin was cleaned with alcohol beforehand .

The EMG recordings were performed by the clinical condition of maximum voluntary clenching of the teeth with gauze (FERRARIO, 1993) , where 3 gauze, 10mm thick , were wrapped in another and positioned bilaterally in the second premolar and first molar region of each subject , and maximal voluntary contraction was recorded for 5 seconds.

Variables percentage of muscle overlap (POC) for the masseter muscles (POCM) and Temporal (POCT), muscle activation - between masseter and temporal (ON) , asymmetric activation between the muscles of the right and left side (SO) and index mandibular torsion (TORS) were used in this study . The indices of SEMG were correlated with the values of the questionnaire Anamnesic Index of Fonseca (Da Fonseca et al., 1994), by Pearson correlation, with significance level of 5 %.

RESULTS

The distribution of their severity found in the study is shown in Table 01. No significant results were found in the correlations between the findings of muscle activation and pain reported by Anamnesic Index of Fonseca . The results of the correlation analyzes are shown in Table 02 . Correlations between the values of muscle activation to illustrate the possible interdependencies between the analyzes were verified .

Table 01 - Frequency of severity of symptoms.

Questionário IAF (Pontos)	Quantidade (n)	(%)
No disfunction - (0 - 15)	5	29
Milddysfunction - (16 - 40)	6	35
Moderatedysfunction - (41 - 65)	4	24
Severedysfunction - (70 - 100)	2	12
TOTAL	**17**	**100**

Table 02 - Correlation between the data evaluated .

		IAF (pontos)	POCM (%)	POCT (%)	TORS (%)	ASSIM (%)	ATIVA (%)
Correlação de Pearson (r^2)	IAF	1,000	-0,171	-0,301	-0,135	-0,219	-0,040
	POCM	-0,171	1,000	0,149	0,580	-0,151	-0,129
	POCT	-0,301	0,149	1,000	0,615	0,068	-0,049
	TORS	-0,135	0,580	0,615	1,000	0,123	-0,282
	ASSIM	-0,219	-0,151	0,068	0,123	1,000	-0,550
	ATIVA	-0,040	-0,129	-0,049	-0,282	-0,550	1,000
Valor p	IAF	.	0,236	0,098	0,285	0,177	0,433
	POCM	0,236	.	0,266	0,004	0,262	0,293
	POCT	0,098	0,266	.	0,002	0,388	0,418
	TORS	0,285	0,004	0,002	.	0,303	0,114
	ASSIM	0,177	0,262	0,388	0,303	.	0,006
	ATIVA	0,433	0,293	0,418	0,114	0,006	.

DISCUSSION

EMG has been shown to be an efficient method of analyzing the stomatognathic system, with good reproducibility, if taken to the precautions and following a standardized protocol. However, it is important to emphasize that the nature of the EMG signal can be altered by noise, crosstalk , that can be in the environment , technical errors and anatomic location. Therefore the reliability of the results is associated with good instrumentation and elimination of possible noise (FERRARIO 2005) .

Differences in patterns of muscle coordination may be useful in differentiating between normal subjects and subjects with mandibular dysfunction, which have no coordination patterns of mandibular movements (Balkhi , 1993) .

In this sample, in agreement with previous studies, the frequency of cases of TMD was higher in females compared to males. The age range of the sample is similar to that found in the literature showing higher prevalence of TMD between the ages of 20 and 40 years (FERRARIO, 2005). The work of Moraes and Bottino (1972) and Portinoi (1995), Name this age group as a productive society, characterized by a time of intense psychological stress that this factor significantly enhances the development of craniomandibulardysfunction .

Almeida (2011) examined some variables such as age, sex, the particularities of each subject in resisting pain or live with the effects from the presence of habit, can mask or exacerbate the effects of pain on the electrical activity of the muscles, since the characteristics of each individual subject are relevant for this type of association aspects. This study reports the presence of this habit can cause spasms, poor blood circulation and atypical contractions in muscles, aspects that cause hypersensitivity in the region in which they are located, may cause a change in the patterntion of electrical activity by hindering the function of same, which was not observed in this study.

With respect to the mean activity of the muscles during maximal intercuspidation, the study subjects showed electrical activityance with values close to those described in the literature, both for normal subjects and for subjects with abnormal (FERRARIO, 1993), demonstrating the pain did not influence the performance of these muscles. The correlations between pain and electrical activity of the muscles were weak and not statistically significant. These results are also not expected because there literature on research (GLAROS, 2004) shows that this relationship, however, the findings of this study can be justified by the fact that the average electrical activity of these subjects are close to normal levels .

CONCLUSION

The results indicated no correlation between activation of masticatory muscles with the presence of symptoms associated with TMD.

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ABSTRACT

For a proper functioning of the temporomandibular joint (TMJ) is both necessary harmony between the ATM itself, as the dental occlusion and neuromuscular balance. The term temporomandibular disorder (TMD) is used to describe a group of diseases that involve the masticatory muscles, TMJ and surrounding structures. The aim of this study was to correlate the presence of symptoms associated with TMD activation of temporal and masseter muscles bilaterally by EMG. The sample consisted of 20 women, aged 20 to 25 years, presenting signs and symptoms of TMD according to the Index of Anamnesic FONSECA. Dual surface electrodes were placed on the masseter and temporalis muscles on both sides. The EMG recordings were performed with maximum voluntary contraction with gauze between the teeth for 5 seconds. The indices of surface electromyography were correlated with the values of the questionnaire Anamnesic Index of Fonseca, by Pearson correlation, with significance level of 5%. No significant correlations were found between the variables of muscle activation and the IAF. The results indicated no correlation between activation of masticatory muscles in the presence of symptoms associated with TMD.

KEYWORDS: Temporomandibularjoint;Temporomandibular Joint Disorders; electromyography.

CORRÉLATION DE LA PRÉSENCE DE SYMPTÔMES ASSOCIÉS À UNE DYSFONCTION TEMPORO-MANDIBULAIRE AVEC L'ACTIVATION DES MUSCLES ET DES ORAGE MASSÉTER

RÉSUMÉ

Pour un bon fonctionnement de l'articulationtemporo -mandibulaire (ATM) estnécessaireharmoniatanto entre l'ATMlui-même, commel'occlusiondentaire et l'équilibreneuromusculaire. Le trouble temporo-terme (TMD) estutilisé pour décrire un groupe de maladies qui impliquent les muscles de la mastication, de l'ATM et les structures adjacentes .L'objectif de cetteétudeétait de corrélerlaprésence de symptômes TMD associés à l'activationdesmusclestemporaux et massétersbilatéralement par EMG . L'échantillon se composait de 20 femmes ,âgés de 20 à 25 ans , présentantdessignes et symptômes de la DMT , selonl'Indice de anamnésique FONSECA . Lesélectrodesdoublesontétéplacéessurlasurface de la masseter musclestemporaux et desdeuxcôtés. Lesenregistrements EMG ontétéréaliséesaveclacontractionvolontairemaximale entre lesdentsavec de la gaze pendant 5 secondes . Lestaux de l'électromyographie de surfaceontétécorrélées aveclesvaleurs de l' indicequestionnaireanamnésique de Fonseca par corrélation de Pearson, avecunniveau de 5 % de signification .Corrélationssignificatives entre lesvariables de l'activationdesmuscleset LAI ontététrouvés . Les résultats ontmontréaucunecorrélation entre l'activationdesmuscles de lamastication à laprésence de symptômesassociés à la DMT .

MOTS-CLÉS: articulationtemporo-mandibulaire, troublestemporo-conjoints ; électromyographie .

LA CORRELACIÓN DE LA PRESENCIA DE LOS SÍNTOMAS ASOCIADOS CON LA DISFUNCIÓN TEMPOROMANDIBULAR CON LA ACTIVACIÓN DE LOS MÚSCULOS Y MASETERO

RESUMEN

Para el correcto funcionamiento de la articulación temporomandibular (ATM) es necesarioharmoniatanto entre lapropia ATM, como laoclusión dental y elequilibrio neuromuscular. El término trastornotemporomandibular (TTM) se utiliza para describirun grupo de enfermedades que involucranlos músculos de lamasticación , la ATM y lasestructurasadyacentes . El objetivo de este estudiofue correlacionar la presencia de síntomas de TTM asociadosconlaactivación de los músculos temporales y maseteros bilateralmente a través de EMG . La muestraestuvo conformada por 20 mujeres ,conedades entre 20 a 25 años , que presentan signos y síntomas de TTM segúnel Índice de anamnésico FONSECA . Los electrodos dobles se colocaronenlasuperficie de los músculos masetero y temporal en ambos lados . Los registros de EMG se realizaron conlacontracción voluntaria máxima entre losdientescon una gasa durante 5 segundos. Los tipos de electromiografía de superficie se correlacionaronconlos valores delcuestionario anamnésico Índice de Fonseca por lacorrelación de Pearson , conunnivel de significacióndel 5 %. Se encontraron correlaciones significativas entre lasvariables de laactivación muscular y LAI . Los resultados indicaron que no habíacorrelación entre laactivación de los músculos masticatoriosconla presencia de lossíntomasasociadoscon TMD .

PALABRAS CLAVE: la articulación temporomandibular , Trastornos de la articulación temporomandibular ; electromiografía .

CORRELAÇÃO DA PRESENÇA DE SINTOMAS ASSOCIADOS À DISFUNÇÃO TEMPOROMANDIBULAR COM A ATIVAÇÃO DOS MÚSCULOS TEMPORAL E MASSETER

RESUMO

Para um adequado funcionamento da articulação temporomandibular (ATM) é necessário harmoniatanto entre a própria ATM, quanto à oclusão dental e o equilíbrio neuromuscular. O termo disfunção temporomandibular (DTM) é utilizado para reunir um grupo de doenças que acometem os músculos mastigatórios, ATM e estruturas adjacentes. O objetivo deste estudo foi correlacionar a presença de sintomas associados à DTM com a ativação dos músculos temporal e masseter bilateralmente através da EMG. A amostra foi composta por 20 mulheres, com idade entre 20 a 25 anos, que apresentaram sinais e sintomas de DTM de acordo com o Índice Anamnésico de FONSECA. Eletrodos duplos de superfície foram posicionados nos músculos masseteres e temporais de ambos os lados. Os registros eletromiográficos foram realizados com a máxima contração voluntária com gazes entre os dentes durante 5 segundos. Os índices de eletromiografia de superfície foram correlacionados com os valores do questionário Índice Anamnésico de Fonseca, através da correlação de Pearson, com nível de significância de 5%.Não foram encontradas correlações significativas entre as variáveis de ativação muscular e o IAF. A análise dos resultados não indicou correlação da ativação dos músculos mastigatórios com a presença de sintomas associados à DTM.

PALAVRAS CHAVE: Articulação temporomandibular;Transtornos da Articulação Temporomandibular; eletromiografia.