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ASSOCIATION BETWEEN TEMPOROMANDIBULAR DISORDERS, POSTURAL BEHAVIOR AND VIOLIN/VIOLA PLAYING

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BACKGROUND

Playing a musical instrument requires the adoption of asymmetrical positions as well as the execution of repetitive movements for long periods of time (Amorim & Jorge, 2016). When the instrument is supported between the shoulder and the mandibular angle, like the violin (Vl) and the viola (Vla) (Neto et al., 2009), there can be an overload of the masticatory system, springing the onset of a Temporomandibular Disorder (TMD) or the exacerbation of a pre-existing condition (Attallah, Visscher, van Selms & Lobbezoo, 2014).

On a different note, the possible relationship between TMD and Postural Behaviour has been widely speculated about, being a controversial topic in dentistry (Manfredini et al., 2012). Some authors stand for it and others against it. However, the physiological mechanisms that connect the stomatognathic system with postural control are yet to be completely clarified (Bascarán, 2013).

OBJECTIVES

To assess a possible association between the presence of signs and symptoms of Temporomandibular Disorders (TMD) in Violinists and Violists and to analyze its influence on Postural Behavior.

MATERIALS AND METHODS

A study group (SG) composed of violinists and violists, was compared to a control group (CG) with equivalent gender and age, composed of subjects that had never played a musical instrument. Both groups had the same number of subjects.

To assess the presence of TMD, the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) was used following the protocol established by Shiffman et al., (2014).

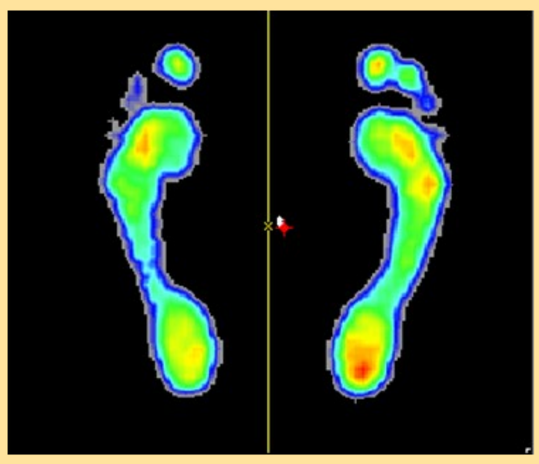

Figure 1: Podal impression of a subject during a recording.

Figure 2: Positioning of a subject on the platform.

On the other hand, Postural Behaviour was analyzed with an *RSscan* 0.5 Plantar Pressure Platform. The acquisition rate was 50Hz. Subjects kept their eyes opened, arms relaxed and a mandibular rest position (Baldini, Nota, Tripodi, & Longoni, 2013). Their placement on the platform was standerdized. The posturographic parameters analyzed were Plantar Pressure Distribution (PPD), Medial-Lateral and Anterior-Posterior Center of Pressure Displacement (COPDml and CPDap), Center of Pressure Sway Area (COParea) and Centre of Pressure Total Trajectory Length (COPlenght).

RESULTS

Seventy eight subjects took part in this study. The study group (SG) included 39 instrumentalists (28 violinists, 11 violists).

TMD signs and symptoms were present in 61.5% of the SG and in 30.8% of the CG (Table 1). They were more prevalent in women and in the youngest age group. In the SG, 38.5% showed signs and symptoms of Pain Disorders, 23.1% of Right TMD and 23.1% of Left TMD. The kind of instrument, years of professional experience and weekly hours of practice had no bearing in the presence of TMD signs and symptoms. No statistically significant difference was found on the posturographic parameters of both groups (Table 2).

Table 1: Signs and Symptoms of TMD types in the SG and in the CG.

	SG	CG	p
TMD n(%)	24(61,5)	12(30,8)	**0,012**
PD n(%)	15(38,5)	6(15,4)	**0,04**
RTMD n(%)	9(23,1)	4(10,3)	0,224
LTMD n(%)	9(23,1)	2(5,1)	**0,047**

PD: Pain Disorders

RTMD: Right TMD

LTMD: Left TMD

Table 2: Association between Posturography and signs and symptoms of TMD.

	SG with TMD	SG without TMD	CG with TMD	CG without TMD	p
Right foot PPD					
Forefoot	19,83[a] ±5,96[b]	20,07[a] ±8,05[b]	18,00[a] ±4,31[b]	20,85[a] ±6,12[b]	0,631
Rearfoot	34,04[a] ±7,81[b]	35,56[a] ±11,20[b]	40,33[a] ±7,27[b]	36,04[a] ±7,87[b]	0,239
Left foot DPP					
Forefoot	17,09[a] ±5,49[b]	19,06[a] ±7,55[b]	14,0[a] ±5,71[b]	15,96[a] ±5,65[b]	0,170
Rearfoot	30,20[a] ±4,82[b]	25,00[a] ±7,00[b]	27,42[a] ±5,02[b]	26,59[a] ±6,31[b]	0,064
COPDml	5,00[c] ±2,78[b]	5,06[c] ±2,44[b]	4,00[c] ±1,86[b]	4,96[c] ±2,34[b]	0,633
COPDap	8,82[c] ±3,51[b]	8,94[c] ±4,57[b]	6,42[c] ±2,47[b]	8,37[c] ±3,24[b]	0,230
COParea	6,60[d] ±6,22[b]	4,47[d] ±3,25[b]	4,12[d] ±3,14[b]	4,10[d] ±2,51[b]	0,165
COPlenght	133,77[c] ±21,58[b]	142,65[c] ±38,11[b]	128,29[c] ±25,79[b]	130,24[c] ±25,85[b]	0,649

[a]: %;

[b]: standard deviation;

[c]: mm;

[d]: mm^2.

CONCLUSIONS

Within the sample studied, the presence of signs and symptoms of TMD was found to be influenced by playing the violin or the viola but this did not result in alterations of Postural Behavior.

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