Evaluation of different instruments for quantifying pain in patients with masticatory muscle pain

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Introduction

The clinical diagnosis of masticatory muscle pain is usually made based on manual palpation of muscles and on the subjective reactions of patients, which creates difficulties in standardization. For this reason, different quantitative methods are proposed (scales for assessing pain sensations, algometry, etc.). The evaluation of pain intensity and recording of these values serves as the basis for an efficient and adequate treatment.

Keywords: masticatory muscle pain, algometry

Purpose: to evaluate the correlation between instrumental and clinical algometric indices. in people with masticatory muscle pain.

Table 1. Spearman rank correlation coefficient for various variables

| Variables | Manual palpation | | Masseter | | Temporalis | | VAS | CPI |
	Temporalis	Masseter	PPT	PTT	PPT	PTT		
Temporalis palpation	1.00	0.05	-0.35	-0.35	-0.2	-0.32	0.12	0.18
Masseter palpation	0.05	1	-0.28	-0.35	-0.22	-0.28	0.34	0.50*
PPT masseter	-0.35	-0.28	1	0.95*	0.53*	0.62*	-0.54*	-0.50*
PTT masseter	-0.35	-0.35	0.95*	1	0.49*	0.61*	-0.60*	-0.59*
PPT temporalis	-0.20	-0.22	0.53*	0.49*	1	0.91*	-0.42*	-0.48*
PTT temporalis	-0.32	-0.28	0.62*	0.61*	0.91*	1	-0.38*	-0.49*
VAS	0.12	0.34	-0.51*	-0.63*	-0.39*	-0.36*	1	0.71*
CPI	0.19	0.51*	-0.50*	-0.58*	-0.47*	-0.49*	0.70*	1

Note: PPT – pressure pain threshold; PTT – pain tolerance threshold; CPI – characteristic pain intensity; VAS – Visual Analogue Scale.

Material and methods

The design of the study was analytical prospective. There were enrolled 30 patients diagnosed according to international DC/TMD criteria and based on the presence of pain in *m. temporalis* or *m. masseter* for not less than 3 months prior to examination. Exclusion criteria: TMJ arthrogenic pain, articular degenerative disorders, dental pain, chronic systemic disorders, fibromyalgia, self-reported psychogenic disorders, pregnant women. There were used GCPS (CPI index), VAS scales and instrumental algometric indices (PPT, PTT). The correlation coefficients of the obtained indices were calculated based on Spearman rank coefficient.

Results

Algometric values (PPT, PTT) for both muscles reversely correlate with VAS: values for masseter (**-0.51**, **-0.63**) and for temporalis (respectively **-0.39**, **-0.36**) (Table 1). The correlation coefficient was negative, significant and strong. Values at manual palpation were in a negative correlation with the algometric values and in a positive correlation with VAS values, but with no significance. CPI values significantly correlate with algometric values (from **-0.47** to **-0.58**) and VAS values (**0.70**). Manual palpation was negatively correlated with algometric values and positively correlated with VAS values, but insignificant. Palpation of the masseter was significantly correlated with CPI values (**0.51**), while for the temporalis muscle, they were not statistically significant (**0.19**). There was observed that in individuals with a significant impairment, a lower pressure value caused pain, therefore, there is a negative significant correlation with the values of algometric values for both muscles.

Conclusions

There was observed a mutual link between VAS and algometry, and that these are more objective and accurate than manual palpation. The application of different instruments for quantifying pain allows highlighting the personalized sensory-pain pattern of the masseter and temporalis muscles with new perspectives in the diagnosis and monitoring of pain.