

Maximum voluntary clenching and unilateral chewing in patients with mild-moderate TMD

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Temporomandibular disorders (TMD) consist of a number of clinical problems that involve the masticatory muscles, the temporomandibular joint and associated structures. The aim of the study was to quantitatively compare electromyographic (EMG) parameters of patients with mild-moderate TMD and healthy subjects.

Twenty patients with mild-moderate TMD (5 men, 15 women, 22–56 y) and 19 healthy subjects (9 men, 10 women, 21–49 y) were analyzed. sEMG of the left and right masseter and temporalis anterior muscles was recorded using a wireless device (TMJoint, BTS, Italy). Each subject performed a 5 s-maximum voluntary contraction (MVC) with the teeth in intercuspal position (CLENCH), and one with two 10 mm-thick cotton rolls positioned on the mandibular second premolars/first molars (COT). EMG activity was further recorded during unilateral, right and left, gum chewing. EMG potentials of both MVC and chewing were standardized as percentages of the potentials obtained during COT recording [1].

During MVC, EMG activities were less symmetric and had a larger torque component in TMD patients than in healthy subjects (muscular asymmetry: $10.4 \pm 9.1\%$ vs $4.4 \pm 4.2\%$, Student's t-test, $p=0.013$; torque: $9.8 \pm 10.9\%$ vs $4.4 \pm 4.0\%$, $p=0.047$). During chewing, all healthy subjects had a good coordination between masseter and temporalis contractions, with a prevalent activity of the working-side muscles. Among TMD patients, instead, 9 subjects performed at least one of their unilateral chewing tests with an altered muscular coordination. EMG activity of TMD patients was less coordinated than that of healthy subjects, with a larger variability between chewing cycles (Hotelling's ellipse area: $2275 \pm 2734\%$ vs $1010 \pm 845\%$, Student's t-test, $p=0.061$).

sEMG analysis could be a useful tool to detect functionally altered stomatognathic muscular coordination.

Dote ricerca: FSE, Regione Lombardia

References

- [1] Ferrario et al. (2004) Neuromuscular coordination of masticatory muscles in subjects with two types of implant-supported prostheses. *Clin Oral Impl Res* 15:219-225.

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