

MRI of the TMJ and sEMG of masticatory muscles in patients with arthrogenous temporomandibular disorders: a correlation analysis

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The aim of this study was to verify if patients with arthrogenous temporomandibular disorders (TMD) with different Magnetic Resonance Imaging (MRI) diagnoses had some objective differences in the surface electromyography (sEMG) characteristics of their masticatory muscles. Twenty-four TMD patients were categorized according to the RDC/TMD [1]; MRI classified patients with disk displacement (DD, mean age 22 years, SD 5; M/F: 3/6), and osteoarthritis and/or disk displacement (OA, mean age 37 years, SD 10; M/F: 4/11). sEMG of the right and left masseter and anterior temporalis muscles was performed according to a standardized protocol, recording teeth clenching on either cotton rolls or occlusal surfaces [2]. EMG data were compared to those collected in control subjects of similar age and sex, and EMG z-scores were computed.

The comparison of EMG z-scores and MRI scores between the 2 patient groups using the Mann-Whitney test was statistically significant ($P < 0.05$): the patients with OA had larger scores than the patients with only DD. The linear correlation analysis run between the EMG and the MRI scores found significant correlations in both patient groups.

The EMG characteristics allowed to well differentiate patients with MRI diagnosis of DD or OA. The objective recording of the masticatory muscle function and dysfunction through sEMG can be a first simple and low cost diagnostic approach to TMD patients.

References

- [1] Dworkin & LeResche (1992) Research diagnostic criteria for temporomandibular disorders: review, criteria, examinations and specifications, critique. *J Craniomand Dis Facial Oral Pain* 6: 301-355.
- [2] Sforza et al. (2009) Mandibular movements at maximum mouth opening and EMG activity of masticatory and neck muscles in patients rehabilitated after a mandibular condyle fracture. *J Cranio-Maxillofac Surg* 37: 327-333.

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