

characterized by grinding or clenching of teeth during sleep, usually associated with an intense (excessive) arousal activity. It is the sleep-related motor disorder of primary interest for dental practitioners, considering several detrimental consequences on the stomatognathic system, including tooth wear, masticatory muscle tenderness and pain, headache and temporomandibular disorders. Based on that, a need emerged to define the best strategies to manage bruxism in the clinical settings. The aim of the study was to evaluate the variation in SB episodes and orofacial pain in four groups of subjects: a control group, a placebo group (using an acrylic appliance covering just the palate) and two groups treated with different oral appliances (OAs) (occlusal splint and functional orthopedic appliance).

Methods: An expert clinician assessed the presence of SB based on the presence of one or more signs/symptoms (i.e. transient jaw muscle pain in the morning, muscle fatigue at awakening, presence of tooth wear, masseter hypertrophy), among patients referring to the Gnathology Unit of the Dental School (University of Turin). First screening recording with Bruxoff® device selected 58 SB patients. Patients were assigned to four groups: control group (14 subjects: mean age 32.7 ± 12.75); placebo group (15 subjects: mean age 32.9 ± 13.83); occlusal-splint group (15 subjects: mean age 33.5 ± 13.76); functional orthopedic appliance group (14 subjects: mean age 33 ± 13.34). Five (N=14) patients dropped out the study (two patients assigned to control group, three to placebo group, three to occlusal-splint group and two patients to group with functional orthopedic appliance) because of the complexity of the study, especially for Bruxoff recording. Consequently forty-four subjects with an effective diagnosis for sleep bruxism (12 for every groups) were selected for the study. Each subject was observed for three months consecutively (T0: screening, T1: 1 week, T2 : 1 month, T3 : 3 months) and monitored with a visual analogue scale in order to evaluate the variation of facial pain. Furthermore, all participants underwent an instrumental recording at home with a portable device (Bruxoff®, OTBioelettronica, Torino, Italy) allowing a simultaneous recording of EMG signals from both the masseter muscles as well as heart frequency to evaluate variation on SB activity. Data were analyzed using Shapiro-Wilk test (for checking the normality), two-way Anova test (for analysis of variance) and test of multiple comparisons of Tukey-Siegel. All statistical procedures were performed with the software Statistical Package for the Social Science v. 23.0 (SPSS 23.0®, IBM, Milan, Italy). For each analysis a p-value < 0.05 was set.

Results: Pain sensation significantly reduced both for stabilization splint and functional orthopedic appliance groups after three months follow-up, with

no differences between the two groups. SB episodes significantly reduced after three months only in functional orthopedic appliance group; no variations were observed in placebo and control groups.

Conclusion: This study showed that two particular kind of OAs could reduce orofacial pain referred by the patients, but only the functional orthopedic appliance showed a statistical significant effect in reducing SB episodes. Further studies on larger and more representative samples, followed for a longer period are needed to obtain major information on SB management.

Periodontal mechanoreceptors: a systematic review

de Biasea Corrado*, **Isola Gaetano****, **Cutroneo Giuseppina****, **Vermiglio Giovanna****, **Anastasi Giuseppe Pio****, **Tepedino Michele***, **Piancino Maria Grazia***

*Orthodontic Division, Department of Surgical Sciences, CIR Dental School, University of Turin, Italy

**Department of Biomedical Sciences and Morphological and Functional Images, University of Messina, Italy

Aim: Functional movements of the stomatognathic system and their relative forces depend on signals arising from various sensory organs in the orofacial structures. A special role is played by periodontal mechanoreceptors and their sensory innervation, located in the periodontal ligament, that is the optimal location for detecting the functional forces on the teeth. They are involved in mechanotransduction and chewing motor control, but there are important limitations of knowledge in the field. For example, even though mastication is a dynamic process, studies regarding periodontal mechanoreceptors are usually conducted in static conditions and mostly in animals, that are characterized by different teeth and occlusion with respect to the humans, often disregarding the functional differences of teeth. This work aims to review the progress in the field, especially during the last three years, with a special attention to the functional significance of experimental results. There have been a number of molecular reports; however, to understand the impact of these reports on the mechanisms of motor control we need to go back to the earliest physiological studies and these have been integrated with recent molecular data. The main results of basic research have been summarized, dividing the animal from the human studies and the signal pathways arising from mechanotransduction have been described.

Methods: A systematic review of the literature was conducted. Original articles were searched through Pubmed, Cochrane Central database and Embase until

January 2016.

Results: 1466 articles were identified through database searching and screened by reviewing the abstracts. 160 full-text were assessed for eligibility, and after 109 exclusion, 51 articles were included in the review process. Studies selected by the review process were mainly divided in studies on animal and studies on humans. Morphological, histological, molecular and electrophysiological studies investigating the periodontal mechanoreceptors in animals and in humans were included and subdivided in the following subheadings: Histological and electrophysiological studies in animals: are the results in agreement? - Changes during development; - Load response; - periodontal ligament as a source of mesenchymal-like stem cells. Molecular and electrophysiological studies in humans: what do we really know? - adaptation to implant-supported prosthesis; Central connections of the trigeminal primary afferent neurons: is there a bias in the basic research? From mechanotransduction to signal pathways: the role of periodontal mechanoreceptors on the chewing pattern motor control.

Conclusions: Our knowledge of the periodontal mechanoreceptors let us conclude that they are very refined neural receptors, deeply involved in the activation and coordination of the masticatory muscles during function. Strictly linked to the rigid structure of the teeth, they determine all the functional physiological and pathological processes of the stomatognathic system. The knowledge of their complex features is fundamental for all dental professionals. Further investigations are of utmost importance for guiding the technological advances in the respect of the neural control in the dental field.

Reliability of the Italian version of the Oral Behaviors Checklist

Donnarumma Valeria, Cioffi Iacopo, Pango A, Manisera Elisabetta, Michelotti Ambrosina

Department of Neuroscience, Reproductive and Oral Sciences, Section of Orthodontics and Temporomandibular disorders, University of Naples Federico II, Naples, Italy

Aim: The aim of this study is to examine the reliability of the Italian version of the Oral Behaviors Checklist Questionnaire (OBC-it), a tool which is widely used in studies concerning TMD compliant and oral parafunctions in the international scientific literature and that has already been subjected to the standard procedures of forward and back translation, committee review and cultural adaptation from RDC-TMD Consortium.

Methods: 282 Students at University Federico II, without temporomandibular pain, according to a validated TMD-pain screening, were recruited and divided into

two groups: Group A (139 subjects, mean age 22.6 ± 5.48) and group B (143 subjects, mean age 23.7 ± 4.21). Participants belonging to group A were asked to fill in the OBC-it twice, with a two weeks interval between the two assessments. Differently from Group A, Group B received additional standardized instructions about the constructs included in the checklist by means of a power point presentation and a verbal explanation from one of the authors. After two weeks, subjects of Group B were asked to fill in the OBC-it again. However, at this stage, half of them (group B1) received again the same instructions, while the other half (group B2) no instructions. The test-retest reliability of OBC-it was assessed by calculating the Intra-class correlation coefficients (ICC) for each of the 21 single constructs and for the total OBC-it score in all groups. The ICC was interpreted as follows: $ICC < .4$ poor reliability, $ICC \geq .4$ but $\leq .75$ fair to good reliability, and $ICC > .75$ excellent reliability. Data were analyzed with SPSS (IBM) Ver. 20. The Statistical Significance was set at $p < .05$.

Results: OBC-it (total score) in group A showed excellent reliability results ($ICC = .87$). The reliability of OBC-it in groups B1 and B2 was excellent and slightly greater than group A. (B1: $ICC = .94$; B2: $ICC = .95$). Generally, all ICC data suggested a good or excellent reliability of the single constructs with the exception of the item 11 ("Hold jaw in rigid or tense position, such as to brace or protect the jaw") which showed fair to good reliability in all groups (Group A: $ICC = .65$; Group B1: $ICC = .61$; Group B2: $ICC = .70$). On the contrary, item 19 ("singing") displayed excellent ICC results in all groups (Group A: $ICC = .90$; Group B1: $ICC = .90$; Group B2: $ICC = .94$).

Conclusions: This study has shown that the Italian version of the OBC, namely OBC-it, is highly reliable and may be used for both research and clinical purposes. The higher ICC values in group B1 and B2 suggest that reliability increases when instructing subjects about the meaning of each item and so that an explanation from the clinician before the compilation could be helpful for a better comprehension of the questionnaire.

Use of aligners for the resolution of extra-articular temporomandibular joint disorder: case report

Macri M., Vitale D., Festa F.

Università G. D'Annunzio di Chieti, Pescara

Aim: The aim of this work is to provide a guidance about the use of aligners in the resolutions of extra-articular temporomandibular joint disorders in patients with middle malocclusions.

Methods: It is presented a 47-years-old male with extra-articular temporomandibular joint disorders: mild dental class III, deep bite, severe myofascial pain syndrome and mild soreness external pterigoideus