

Bruxism Unconscious Oral Habit in Everyday Life

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Abstract

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BACKGROUND: Bruxism is defined as an unconscious oral habit of rhythmical, unfunctional clenching, grinding and making chewy sounds with the teeth while making movements that are not part of the masticatory function and that lead to occlusal trauma.

AIM: The purpose of this article is to show the habit bruxism, in everyday life, reviewing literature data.

METHODS: Data was researched by using information on the internet on Researchgate, Pubmed, ScienceDirect, by analysing written articles and books and student books. From 200 articles that were analysed, 45 articles and two textbooks were involved in writing of this review article.

RESULTS: Results derived from the analyzed literature, classify the main consequences of bruxism, from fatigue, pain, wasting of the incisal edges and occlusal surfaces of the teeth to loss of teeth, dental implants, headaches, periodontal lesions and TMD (dysfunctions of the masticatory muscles and temporomandibular joint (TMJ)) in severe cases. All these problems negatively affect the quality of everyday life of the patient.

CONCLUSION: Bruxism as a parafunctional habit is present in everyday life needing a multidisciplinary approach for prevention of the teeth, bone and prosthetic restorations. The prevalence of bruxism is growing related to stress, drugs, changes in lifestyle, bad nutrition and sleep problems. The therapist should follow signs and symptoms to ensure the best treatment plan of the patient.

Introduction

Bruxism is defined as an unconscious oral habit of dysfunctional rhythmic pressing, clenching and grinding of the teeth when performing movements that are not part of the masticatory function that leads to occlusal trauma read in the dictionary of dental prosthetic terms. As an oral parafunctional activity it is not related to normal physiological functions, such as speech, breathing, chewing and swallowing.

Bruxism is a complex occlusal parafunction which can hardly be placed in several different categories of parafunction [1]. It can be classified as a sleep disorder, according to the international classification of sleep disorders, when night grinding of teeth occurs in combination with at least one of the following signs: damage to teeth, sounds associated with bruxism and pain of the masticatory muscles. The

episodes of bruxism, its duration and intensity in which they appear are different, individual to each patient. The appearance of bruxism can be seen from 6-20% of the population in each age starting from the eruption of deciduous teeth.

This parafunction is discovered when the patient goes for the first time to the dentist. One of the most prominent clinical signs is abnormal wearing of the teeth, caused by clenching and teeth grinding. However, this is not a decisive sign of bruxism because the wearing of teeth can occur when eating acidic foods or improper tooth brushing (erosion and/or dental abrasion). In this way, the therapist should always consider the bruxism antagonist who is also worn, damaged or reduced [2].

Bruxism is common in our population manifested by pinching and grinding of the teeth, as a parafunctional habit is characterised by different intensity and periodic repetition, with tendon to

decrease with age, while generally observed it has a common representation [3].

Psychosocial factors like stress or personal characteristics and pathophysiological factors (e.g., illness, trauma, genetics, smoking, intake of caffeine, medications and illicit drugs), sleep disorders (sleep apnea and snoring) and involving dopaminergic system are often present in the aetiology of bruxism. There is not only one factor responsible for the occurrence of bruxism. It is also evident that there is no generalised treatment effective to eliminate or reduce its occurrence [4].

The aetiology of bruxism is not completely resolved [5]. The anatomy, morphology and dental occlusion are linked to bruxism.

The mobility of teeth, pain, hypertrophic facial muscles and reduced capacity to open the patient's mouth after waking in the morning are changes that are observed. Frequent headaches, especially in the temporomandibular region in everyday life are often noticed [6]. Other clinical signs in patients with bruxism are fractures of the teeth or dental restorations (fillings, or damage to prosthetic restorations as crowns, bridges or dentures) [7].

The purpose of this article is based on own dental experience funded by data from the literature, to show the unconscious habit and its appearance in everyday life, diagnosis of bruxism, etiological factors, clinical manifestations, and treatment using occlusal inserters (splints) [7].

Material and Methods

Bibliographic review of the literature for the habit bruxism was carried out for this article. Its classification, etiological factors, clinical manifestations and therapeutic modalities were obtained with research on the internet. Specialised websites were used such as Researchgate, Pubmed, Science Direct, and through the application of domestic and foreign literature, analysing the written paper's books and textbooks. Keywords such as bruxism, habit, damage to teeth, teeth grinding, muscle pain, temporomandibular dysfunctions, TMD, TMJ, occlusal inserter were applied in the search database. There were 200 articles read and analysed and many internet pages. In the preparation of this paper, 45 texts and two textbooks were incorporated and are cited in the article.

The criteria for selection of papers included the prevalence of the disease, clinical manifestations, diagnosis and the consequences. These papers were used with permission from their authors.

Results

The earliest references to bruxism are described in the Bible, in which dental pain is associates as "the first sentence of the Lord" [8]. In the illustrated medical dictionary by Dorland, the word bruxism comes from the Greek word *brahmin*, which means grinding of the teeth [9].

Bruxism is described by authors as an orofacial motor activity during sleep, characterised by repetitive or sustained contractions of the mandibular elevator muscles, which can cause muscle rigour, about 150-340 kg. This force directed, with exactly obtained voltage during active periods results in fractures and damage of teeth, periodontal problems, pain, muscle fatigue and headaches [10].

Bruxism can be defined as a parafunctional activity on the masticatory system which includes clenching and grinding of the teeth at an unconscious level where the neuromuscular protective mechanisms are absent. This can cause injuries to the masticatory system and TMJ dysfunction. Episodes of occurrence of the disease are highly variable as in a patient and between different patients. The duration of the night grinding can be 5 to 38 minutes as a part of the parafunctional activities. When measuring the strength of the contact between the teeth, it can be three times higher than the normal functional activity of the masticatory system. Other authors proved that during the disease a collapse of the structures of the orofacial system could occur [11].

Bruxism is one of the most relevant, complex and destructive dental disorders [12].

Classified by the degree of difficulty bruxism can be moderate, severe and extreme (mild, moderate, severe) [9].

According to the neuromuscular activity during the bruxism, there can be a division into three types of bruxism: toned, periodic and combined [1].

In the direction, the movements are made bruxism has horizontal and vertical form. During the sleep, bruxism may be horizontal or vertical, but conscious daily bruxism known as bruxomania, cannot be performed with a horizontal movement [1].

It can also be classified as centric and eccentric [9]. Centric bruxism consists of continuously pressing the teeth for some time with the destruction of their supporting structures but also conditions that include the masseters and temporomandibular joint. In eccentric bruxism, there are isotonic muscle contraction and damage on the incisal edges of the teeth particularly in the anterior arch of teeth [12]. However, not all cases of wearing the incisal edges are the result of a parafunctional activity. It may be associated with other habits like biting nails, biting objects among other types of habits [9].

Acute, subacute or chronic is another classification of bruxism. Occlusal disharmony interferes with bruxism when the patient shows signs of/ or muscle symptoms, as researched by authors. This occurs in centric relation and/ or functional lateral or protrusive phase [13], [14], [15], [16].

Daily and nightly bruxism, is the most common division of bruxism having different characteristics and causes [8], [10]. Bruxism which occurred during the day is called daily bruxism (DB), while bruxism occurring during sleep is called nocturnal bruxism (NB). Daily bruxism is known as bruxomania [1]. These two types of bruxism have different clinical entities that occur in different degrees of consciousness and have different etiologic factors. These two types of bruxism differ and need to be diagnosed and require a different treatment plan [17]. DB and NB are classified as primary when no clear medical causes, systemic or psychiatric disorders occur. Although in most of the literature bruxism is mentioned as a nighttime disorder, there are cases where its appearance was observed daily. Therefore bruxism in accordance to its appearing can be divided as daily, nightly and combined [1].

Primary bruxism occurs without a clear reason. Secondary bruxism is associated with clinical disorders, neurological or psychiatric disorders associated with iatrogenic factors or other types of sleep disturbance [9], [17].

Bruxism can be classified by the complications arising from its destructiveness [1]. The forces that occur in patients with bruxism can cause a devaluation of the successfully achieved prosthetic construction. If prevention measures are not undertaken the existing bruxism may cause very severe complications, such as loss of dental implants [1]. Complications can range from excess damage of the restorations and surrounding dentition, lack of osseointegration, to loosening or fracture of implant restoration. The recommendation made by dental prosthetic specialists includes taking preventive measures and treatment protocols for the patients by wearing occlusal splints [7].

Many authors confirm that the aetiology of the bruxism is multifactorial [1], [6], [18], [19].

The psychosomatic health must be seen as a whole in this condition. Patients with bruxism are seen as bruxers. Some of them are aggressive and they use the stomatognathic system for discharge of their aggressiveness [20], [21], [22], [23], [24], [25], [26]. The neuromuscular mechanism is explained as an interaction between the factors for the presence of early occlusal contacts and the psychological stress in the patient [1].

Aetiology is also associated with local, systemic [23] and neurological factors [11]. Local factors including traumatic occlusion, early contact, excess restorations, dental cysts, the atypical eruption

of milk and permanent teeth contribute to the emergence of bruxism. Malocclusions, incorrect restorations, periodontal calculus, tooth mobility, deformity of the lips, gingival hyperplasia and other factors related to the occlusal physiology favour the occurrence of bruxism [27], [28]. The other system factors include nutritional deficiency, parasitosis, Down syndrome, gastrointestinal disorders, allergic reactions, uncontrolled enzymatic digestion, brain damage, adverse effects of drugs, mental retardation and central paralysis [29].

Nutritional factors such as consumption of beverages, coffee, tea, chocolate drinks, non-alcoholic drinks, and smoking habits may be involved, since stimulating the central nervous system, increases anxiety and stress. Because of this, they represent triggering factors for the emergence of bruxism [9], [29].

Several studies focus on explaining the relationship between allergies and intestinal parasites with bruxism. There is an intimate relationship between IgE levels, eosinophilia and bruxism. In allergies, as well as parasitic intestinal infections, levels of IgE and eosinophilia are high, followed by the emergence of oral manifestations [27].

Bruxism is detected in patients with neurological disorders who receive neuroleptic and anticonvulsant therapy. It is discovered in patients with brain abnormalities that are taking levodopa and using stimulants like amphetamines and antidepressants, which are risk factors [11], [29], [30]. The main reason for the parafunction-bruxism is considered to be the disruption of sleep, which is explained by the theory of excitation [31]. In aetiology, despite local and systemic factors, there are factors such as professional practising competitive sports [9].

The diagnosis and clinical evaluation of bruxism are complex because both bruxers and normal individuals may show parafunctional nocturnal activity [9].

Early diagnosis of bruxism is of great importance both for its treatment and for its prevention. Kapusevska in trials of patients at the Clinic for Dental Prosthetics for objective diagnosis of bruxism uses bruxoanalyzer applied to determine the horizontal type of bruxism while for determining the vertical type of bruxism bruxoquantifier is applied [32], [41].

The diagnosis must focus on identifying the signs and symptoms reported by the patient or the dentist during clinical examination [14].

Parafunctional forces directly affect the enamel on the teeth that can be observed with their abnormal wearing. It is used as the most common evidence of bruxism. This wearing may be limited to one tooth or the entire dentition [33], [34]. The radiographic analysis may show loss of laminate changes of the periodontal space that can either

disappear or be with increased resorption of the tooth root, a fracture or changes in the dental pulp, sometimes the appearance of the pulpal stones [9].

The main lesions caused by the present bruxism can be summarised as changes in teeth, periodontium, masticatory muscles, TMJ, headaches, behavioural and psychological effects. Other signs are also symptoms of the parafunctional hypermobility in the absence of periodontal disease, pulpitis, tooth pain (with normal pulp, partial crown fracture and migration of teeth) [7]. Muscle symptoms include fatigue, increased tension in masseters, especially in elevator muscles (m. Masseter and m. Temporalis). The most common symptom is muscle fatigue that represents resistance over a sustained effort, without clear signs or symptoms of pain or discomfort [9], [36].

Problems with the movement of the body can develop because of bruxism. In addition to that, it can affect the masticatory muscles and back muscles of the cervical spine, which can cause muscle pain and chronic future permanent changes [20].

The harmful habit bruxism causes relevant changes in the structure of the stomatognathic system, causing friction, inflammation, necrosis of the pulp and mobility of teeth. There may be the appearance of muscle pain and tenderness on palpation of TMJ, pain, cracking and other sounds from the joint as a lack of coordination of the lateral pterygoid muscles. In certain patients, capitulum mandibulae may change, and loss of the vertical dimension and mandibular displacement on the maximum intercuspidal position (MIP) may develop [37].

It is of significant importance for a differential diagnosis to be obtained depending on the aetiology and clinical signs observed during the clinical examination of the patient and including symptoms derived from the history. Treatment and therapy vary from patient to patient [13].

The treatment for bruxism requires a multidisciplinary approach, including psychology, psychotherapy and speech therapy [10].

Planning the therapy must be with meticulous attention to details. The purpose is to reduce physical and mental stress, treating signs and symptoms [3].

Early treatment involves reducing the psychological stress through the use of relaxation methods like exercises, massages and physiotherapy [38]. This treatment reduces symptoms but does not remove the cause. The habit may be reactivated when the tolerance of the patient to occlusal change decreases [10].

Occlusal therapy may include occlusal adjustment of the situation in the mouth. Although occlusal position works with minimal impact on the disease process of occlusal adjustment is an irreversible therapeutic method to minimise the

damage caused by clenching and grinding of the teeth. But it is not a treatment for the disease [9]. Applying interocclusal inserter (splints) [7] reduces the symptoms of bruxism. Their application may not stop the disease, but will not allow its progression, because it allows the exact condyle position in the fossa mandibular [38], [39].

The occlusal inserter may vary in material, rigidity, resiliency and extent of occlusal coverage. In this way, according to the therapeutic indications splints can lead to various intermaxillary relations [4], [6], [28]. Depending on the complexity of the case it is usually recommended to be used at night, with weekly suggested controls. The author's processed papers for implementation of various types of occlusal inserter, which are analysed from different perspectives. Occlusal inserter can be made of different materials. There is hard and soft occlusal inserter. Soft can be used to prevent further attrition caused by bruxism and various etiologic agents [40]. Occlusal inserter can be made of high quality and modern way and with alternative methods. From Kapusevska's trials of patients treated with occlusal inserter made with the material, the eclipse was given the conclusion that they are superior to conventional occlusal inserter [41]. Furthermore, occlusal inserter (splints) may be separated from the treatment required for horizontal and vertical bruxism. For the treatment of patients with horizontal bruxism and TMD Kapusevska et al., recommend applying repositioning occlusal inserter, while in patients with bruxism and vertical musculofascial pain occlusal stabilisation inserter should be used [42].

Despite the aetiology of bruxism, the occlusal therapy can be suitable, because it promotes functional comfort, prevention of further damage to components of the masticatory system. Pharmacological treatment with drugs such as dopamine agonists, anxiolytics, buspirone, nonbenzodiazepamic hypnotics, anticonvulsants and botulinum toxin are appropriate when bruxism is very pronounced [5], [23], [24], [25].

Discussion

Early diagnosis of bruxism is necessary to avoid damage to the TMJ and other oral or facial structures such as teeth and masticatory muscles. Bruxism is present as an unconscious habit every day. Having that in mind, lesions caused by bruxism can easily affect the quality of life of patients mainly due to the high association of pain and discomfort [43].

Bruxism diagnosis is usually made clinically and is based on the clinical history of the patient and the presence of typical signs, including tooth mobility,

damage to teeth, masseteric hypertrophy, indenting the tongue, hypersensitive teeth, and pain in the masticatory muscles. It is possible for cracking or locking of the TMJ to appear [43].

However, it is important to understand that bruxism as an isolated condition cannot cause damage to the teeth. Another possible reason for the damage is acid erosion, which can occur in people who drink acidic juices as concentrated fruit juice or in people who have frequent vomiting or regurgitation of stomach acid. People also demonstrate normal levels of damage to the teeth, associated with the normal function. The presence of damage to teeth only indicates that it occurred at some point in the past and shows that the loss of tooth substance does not progress. People who grind their teeth and minimally apply parafunctional pressure on them also show no damage to the teeth [44].

Bruxism diagnosis usually involves the exclusion of dental, temporomandibular disease and rhythmic movements of the jaw resulting from disorders associated with seizures. This usually includes dental examination and electroencephalography possible, in case you need to diagnose the disorder attack. Damage to teeth may be perceived during a routine dental examination.

When a patient has daily bruxism, he usually denies that he is pressing and clenching his teeth because they're unaware of the habit [45]. Generally, in these patients sleep is relatively good. Usually, the sleeping partner is the person who sleeps less awakening from the grinding sound of the bruxers.

Few authors have studied the effectiveness of sleep in patients with bruxism finding different values for REM sleep [46]. That is why Bader finds its prolongation and Butros et al., [47] its reduction.

Conclusion

With the analysis of such abundant area on the field of bruxism, it is aware that bruxism represents a high frequency of appearance in all age groups and is an important oral health issue. This parafunctional activity represents a significant change in the stomatognathic cavity and thus on the entire body. Because of its presence, a multidisciplinary approach is indicated for the reduction of injuries in osteo-dental structures.

It is noted that recently the prevalence of bruxism is growing and is associated with many symptoms such as stress, drugs, anxiety and sleep disorders.

An opportunity is created using the main scientific databases for better understanding the main

principles for treatment of the oral habit-bruxism as a significant health issue.

By learning what is bruxism dental professionals will understand the better diagnosis, risk factors, prevention and treatment methods used. Prevention should be considered as a basic measure in the treatment of bruxism, avoiding the risk of development of various oral diseases with their complications and improving patient's lives.

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