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PREVENTION OF BRUXISM IN DENTISTRY AT CLINIC LUCHUNIE (LITERATE REVIEW)

Burkhonova Z.K.

Samarkand State Medical University

ABSTACT

Bruxism symptoms are commonly seen by dentists as part of their regular patient care. Screening for sleep issues and symptoms is one way to improve the assessment of a patient's status. This tool is useful for understanding patient complaints and orofacial symptoms, which makes it easier to customize treatment. Furthermore, it sheds light on clinical symptoms. When people with bruxism are judged to require it, somnologists may be consulted for a comprehensive assessment or treatment of coexisting sleep disorders.

Keywords: masticatory muscle activations, stress sensitivity, dopamine, and bruxism

АННОТАЦИЯ:

Симптомы бруксизма часто наблюдаются стоматологами в рамках их обычной заботы о пациентах. Скрининг на проблемы со сном и симптомы — один из способов улучшить оценку состояния пациента. Этот инструмент полезен для понимания жалоб пациентов и орофациальных симптомов, что облегчает индивидуализацию лечения. Кроме того, это проливает свет на клинические симптомы. Когда людям с бруксизмом это необходимо, сомнологов могут привлекать для комплексной оценки или лечения сопутствующих расстройств сна.

Ключевые слова: активация жевательных мышц, чувствительность к стрессу, дофамин и бруксизм

ANNOTATSIYA

Bruksizmning simptomlariga stomatologlar o'zlarining odatiy bemorlarni parvarish qilish jarayonida tez-tez duch kelishadi. Uyqu muammolari va simptomlari uchun skrining o'tkazish bemor holatini baholashni yaxshilash usullaridan biridir. Bu vosita bemorlarning shikoyatlari va orofasial simptomlarni tushunishda foydali bo'lib, davolashni individuallashtirishni osonlashtiradi. Bundan tashqari, u klinik simptomlarga oydinlik kiritadi. Bruksizm bilan og'rigan odamlar uchun zarur bo'lganda, uyqu bo'yicha mutaxassislar yondosh uyqu buzilishlarini kompleks baholash yoki davolash uchun jalb qilinishi mumkin.

Kalit so'zlar: Chaynov mushaklarining faollashuvi, stressga sezgirlik, dofamin va bruksizm

INTRODUCTION

"Bruxism" has been a controversial topic in the academic and professional societies of dentistry for decades due to differing definitions and the term's alleged connection to ethical considerations, many of which are today seen as having little scientific significance. Sleep bruxism (SB) is thought to affect 15–23% of people, with slightly greater rates in

children (14%), adults (8%, primarily those aged 19–45), and the elderly (3%, according to some sources) [12, 18]. The majority of the percentages were mostly from questionnaires rather than precise statistics. In fact, according to the authors, bruxism is not gender-specific [18]. There has been much conjecture regarding the causes and origins of bruxism. Stomatologists' long-held view that occlusal adjustments reduce or eradicate bruxism is called into question by recent research that indicates a greater role for centralised regulation in the appearance of bruxism. Rather, they suggest ancillary elements like the jawbone and teeth as possible culprits. Dopamine and other neurotransmitters, genetics, and sleep issues are examples of neurochemical variables; brain and muscle activity, as well as cardiac and respiratory processes, are examples of physiological factors; and stress sensitivity, personality traits, and anxiety are examples of psychological factors. The ICSD-3 identifies bruxism as a sleep-related movement disorder, and the 2013 international agreement describes it as "repetitive activity of the maxillofacial system, characterised by clenching or gnashing of teeth and extension of the lower jaw." Experts from around the globe developed separate definitions for bruxism when awake and bruxism while sleeping as part of the 2017 "Assessment of the status of Bruxism" conference. The modified definitions are as follows. People with sleep bruxism, which is characterized by rhythmic (phasic) or irregular (tonic) activity of the masticatory muscles during sleep, do not have motor dysfunction or sleep disturbance. The chewing muscles used while awake are referred to as bruxism in the waking state. It is characterized by repetitive or prolonged tooth contact, as well as lower jaw compression or thrusting, and is not a motor condition. The International Classification of Diseases, Tenth Revision (ICD-10) places bruxism under the heading of "other somatoform disorders" (Class V. Unit: F40-F48. Code: F45.8). As a result, bruxism is a habit that may eventually cause health issues rather than an illness. Numerous research have demonstrated the connection between bruxism and psychosocial factors, and psychological stress is recognized as a risk factor for the development of bruxism. The link between emotional issues and bruxism has been confirmed by recent studies [13]. A person with bruxism suffers increased stress as a result of their body's abnormal functioning, which exacerbates their symptoms by making them clench their jaw and grind their teeth more than normal. Most rhythmic masticatory muscle activations (RMMAs) seem to precede a sequence of events associated with sleep waking. Elevated levels of autonomic sympathocardial activity, heart rate, electroencephalogram (EEG) activity, respiratory amplitude, electromyographic (EMG) activity of the jaw-opening muscles, and blood pressure measurements are among these events. Two possible causes of micro-awakenings, which result in bruxism during sleep, are a decrease in the pH of the oesophagus or a breakdown in the respiratory tract's patency. Despite these advancements, the theory behind occlusive disorders has not been completely refuted, leaving clinicians perplexed about how to properly diagnose these conditions and, consequently, how to treat them [20]. There are some potential advantages to nighttime bruxism. For example, it may help people with obstructive sleep apnea (OSA) maintain open airways, increase salivary flow by mechanically stimulating the parotid glands to remove acid from the throat, and even slow down aging and prevent cognitive decline. There are currently no data-based recommendations for bruxism therapy, even though these must be founded on unfavorable clinical results. Treatment for nocturnal bruxism should still be cautious and may include medication, occlusive mouthguards, physiotherapy, psychotherapy, and encouraging conversations (counselling). According to the most recent scientific research, one of SB's issues is that it is not necessarily pathological and, as a result, does not always need therapy.

Therapy should focus on identifying the diseases and etiopathogenetic factors that contribute to nocturnal bruxism rather than the bruxism itself because it might have both protective and harmful effects [20]. Considering what A. Compared to the general population, rhythmic muscle movement (RMMA) occurs before "sleep apnea-hypopnea syndrome" in 25% of bruxism patients (González, 2023, p. 11). According to the most commonly known theory, RMMA is produced in SB to protect the sleep cycle from this oxygen deficiency, and microarousal is brought on by hypoxaemia as a result of SAHS [11]. Other conditions associated with bruxism include gastro-oesophageal reflux disease [6] and gastro-oesophageal reflux [23]. Advanced age, obesity, smoking, and alcohol consumption are common risk factors for both diabetes and bruxism; the combined prevalence of the two conditions is thought to be between 20 and 40 percent. According to a number of studies, bruxism is linked to snoring while you sleep, hypoxia, hypertension, and a quality of life metric related to dental health [8]. Sleep bruxism has been connected to neurodegenerative disorders such as Parkinson's disease and dementia. There is some evidence linking REM sleep behavior disorder (RBD) to neurodegenerative illnesses. RBD is detected in more than 30% of cases after 5 and 14 years after diagnosis, and it is detected prior to neurodegenerative diseases in 90% of cases [20]. Parkinson's disease has been linked to bruxism and restless legs syndrome (RBS), according to two studies. When a patient reports both a high frequency of RMMA during rapid eye movement (REM) sleep and teeth tapping, further neurological testing is recommended. This could point to a potential behavioral problem. More research is required to better understand the connections between these issues and to spot early warning indicators of various neurodegenerative illnesses. Excessive mechanical stress from bruxism can lead to tooth fractures, chipped or broken teeth, gum disease, hypertension in the teeth-grinding muscles, and temporomandibular joint (TMJ) pathology [16]. The bruxism trio is one theory that attempts to explain how respiration, bruxism, and acidity—an erosive factor—are related. This group includes sleep disorders associated with respiratory obstruction deficit, teeth grinding brought on by microarousals, and sleep architectural disorders associated with GERD. Bruxism in the mouth is characterized by a scalloped tongue and a roller-like thickening of the cheek mucosa [2]. Increased friction between the antagonist surfaces causes pathological tooth erasure in patients with insufficient saliva and acid-induced surface roughness. In certain clinical settings, a comprehensive evaluation is necessary to establish the best course of treatment. Positive pressure in the upper respiratory tract, drugs to relieve the symptoms of gastro-oesophageal reflux, and orthopaedic devices to correct lower jaw protrusion are all potential solutions. In addition to the more traditional risk factors, dentists should take into account the bruxism trinity, which consists of tooth wear, erosion, and sleep apnea.

The validity of the assessment technique is essential to the validity of the results when diagnosing bruxism.

Diagnostic techniques for bruxism fall into two primary categories: non-instrumental (self-reports) and instrumental (electromyography and polysomnography). The following changes were made to the bruxism assessment system that was first proposed to Lobbez et al. [7] in 2013 after taking into account the feedback from Raphael et al. (2016) [17]: - A positive self-report alone is used to determine whether a person has possible bruxism for sleep/wakefulness; - A positive clinical examination, with or without a positive self-report, is required for probable bruxism; - A positive instrumental assessment is required for established bruxism, with or without a positive self-report and/or a positive clinical examination. When a patient is filling out a medical history or assessment form, the first question you ask them is if they

grind or clench their teeth. However, self-diagnosing parafunctional activity is challenging. Additional signs of a parafunctional disorder include clinical signs of bruxism in both the awake and sleeping phases. A dental examination can detect diseases such bone eczostosis, lip or tongue indentations, and hypertrophy of the masticatory muscles. These symptoms could be related to functional motor processes like swallowing. Whether it is happening while you are awake or asleep, bruxism can also be indicated by mechanical tooth wear (abrasion) or damage to the teeth's hard tissues (cracks). In the absence of current dysfunction, muscle atrophy does not rule out a history of bruxism during sleep. Possible problems include receding gums, loose teeth, periodontal disease, and swelling of the periodontal ligament. By tracking the electrobiographic activity of the same muscles, a doctor can distinguish between waking and sleep bruxism. Dentists can use basic electromyographic devices (such as BiteStrip, Great Lakes Orthodontics) to assess whether muscles are engaged while you sleep. Even if a single EMG test frequently results in a higher percentage of false positive results, validity and reliability will be respectably acceptable when compared to subjective evaluation techniques [14]. Audio and video recordings can be included in addition to EMG data. The PSG plus audio and video recording system is currently the gold standard for evaluating nocturnal bruxism because it can obtain an electroencephalogram, electrocardiogram, electrooculogram, and EMG of the masticatory muscles. This allows for the exclusion of EMG activity unrelated to nocturnal bruxism. Another advantage of gathering this physiological data is being able to determine how the person is sleeping. Given the potential for increased physical and psychological stress, the examination's use in clinical dentistry practice is questionable. To evaluate the participants' quality of sleep, a variety of portable ambulatory EMG devices can be used. Electromyography (EMG) or polysomnography (PSG) can be used to assess bruxism during night [4]. To assess and monitor bruxism when awake, a smartphone app was created in 2018 (Manfredini and Bracci, 2018). It is advised to measure the activity of the masticatory muscles during bruxism rather than only counting the number of episodes to make inferences regarding their clinical significance. The existing information suggests that the risk factor is the amount of EMG activity rather than the frequency of bruxism episodes. Compared to the control group, this level was seen to be higher in individuals with temporomandibular joint issues. Comparing the total amount of activity and duration with the initial level of quiet is crucial when analyzing bruxism in sleep. It's also advisable to search for EMG signals that show increased masticatory activity while you're awake, such as tooth contact, as clenching your jaw while awake may indicate a temporomandibular problem. Treating nocturnal bruxism may result in excessive occlusal stresses that exceed the maximal compressive force when aware. The morphological and physiological functions of the teeth, gums, jaw muscles, and TMJ, as well as their overall health, depend on reducing this type of severe mechanical stress. Numerous studies are currently being conducted to confirm the effectiveness and safety of bruxism treatments. Medication, biofeedback, cognitive behavioral therapy, and mouthguards that stabilize the mouth are among the available treatment options. Occlusal mouthguards are a popular and reputable hardware treatment. This comprises upper jaw stabilization devices, which are used daily in clinical dentistry as a regular management procedure. The therapeutic benefits of dental mouthguards have not been thoroughly and objectively compared to those of electromyography (EMG) and polysomnography (PSG). Other mouthguard designs have been employed, including a splint for the front tooth and an enhanced mandibular reposition mouthguard that directs the jaw to the projecting position. Stabilizing mouthguards are a

safe and efficient method of reducing the frequency and severity of bruxism, according to preliminary studies. Restoring a normal vertical bite opening (VDO), attaining a stable and balanced bite posture, and influencing the articular condyle's placement in the articular fossa to release the disc are the main goals of hardware treatment [4]. This is achieved by therapy after a certain adaptation period; additional orthodontic treatment, adhesive restorations, or prosthetic fabrication may correct the result. A stabilizing mouth guard may be useful for the most common TMJ and muscular complaints. With regard to W.K. According to Solberg et al. (2007) [19], an occlusive mouth guard improves patient comfort by reducing muscle activity. When treating bruxism with TMJ functional problems, this guard works well [3]. The study of prostheses and bruxism has prompted academics to hypothesize about the potential relationship between the two, highlighting potential causes and strategies for designing prosthetics for bruxism patients. While the effect of bruxism on implant survival is unknown, it has been associated with a higher incidence of mechanical and/or technical issues during orthopaedic rehabilitation, indicating that it might be a risk factor. When a bruxism patient requires a prosthesis, it is crucial to ensure that the components supporting the prosthesis are capable of withstanding the severe occlusive tension that will unavoidably arise [5]. A nighttime denture can be a wise purchase for people with sleep bruxism in order to shield their teeth from possible movement that detachable partial dentures may cause [9]. One of the main effects of bruxism on dental care is the unpredictability of complex procedures. Permanent prostheses are dangerous because they fail to take this problem into consideration, which can result in cementation of orthopaedic structures, chipped ceramics, and uncomfortable TMJ sensations [1]. According to the study, orthopaedic structures that use high-strength crystalline ceramic mass have a much longer service life in patients with bruxism than those that use a glass matrix that contains less than 50% crystalline material. The findings indicate that CL-3a and CL-3b groups for different types of ceramic should be given priority in orthopaedic therapy for bruxism patients. Patients should receive comprehensive therapy that integrates all aspects of modern dental care in order to treat bruxism. Strength, viscosity, and adhesion are just a few of the physical and chemical characteristics that must be carefully taken into account when choosing a ceramic mass material [1]. Orthopaedic implant designs must be well-informed about the risks in order to prevent late complications and disappointments in the care of patients with bruxism [17]. There is currently a lack of comprehensive research on the effectiveness of cognitive behavioral therapy in treating bruxism. A novel strategy known as biological feedback treatment (BFT) has shown some promise in reducing EMG activity in nocturnal bruxism, although its long-term effectiveness is still debatable. As part of his thorough investigation, N. According to Minakuchi et al. (2022), biofeedback techniques significantly reduced EMG events associated with bruxism at night with a reasonable degree of certainty. A study that examined M. De Albuquerque Vieira (2023) demonstrated that visual and auditory biofeedback can reduce excessive activity of the chewing muscles over the course of many days of intervention. It has been hypothesized that awake bruxism could be controlled by biofeedback [10]. In addition, some pharmaceutical techniques have been used for therapeutic objectives, such as injections of botulinum toxin type A (BTX-A), anticonvulsants, proton pump inhibitors, and antihypertensive medications. Centrally acting drugs such clozepam and clofelin have been demonstrated in studies to lessen SB episodes; however, because to their side effects, care should be used when taking these medicines. According to clinical studies, botulinum toxin is a safe and efficient treatment for bruxism. A

team of researchers recently confirmed that opipramole is helpful in treating severe sleep bruxism [16]. Before pharmacological treatment is employed in the real world, more research is needed to evaluate the advantages, hazards, and characteristics of the targeted participants. medical care. Among the most widely used methods are electromyography (EMG), low-level laser treatment (LLLT), massage, acupuncture, ultrasound, cryotherapy, microcurrent electrical neuromuscular stimulation, kinesiotherapy, and percutaneous neuromuscular stimulation. Low-level light treatment (LLLT) is a non-invasive, low-cost alternative. Irradiation of trigger sites is an effective treatment for oedema, hyperaemia, and orofacial pain. Acupuncture is another treatment option for bruxism; patients report reduced anxiety and anterior temporal and masticatory muscle activation. Stimulated acupuncture points can change blood circulation patterns, which relaxes muscles and reduces pain, inflammation, and spasms. A laser, electric current, infrared light, or needles can all be used to stimulate acupuncture sites. Since the second method is less invasive and the effects at the acupuncture site wear off more quickly, children should use it instead of the first. The psychological treatment includes suggested hypnosis, relaxation techniques, counseling, lifestyle changes, and sleep hygiene education. However, a number of risk factors, such as alcohol, tobacco use, psychological stress, and some medications, increase the likelihood of bruxism or make it worse. While some medications and addictive substances are exogenous indicators of the likelihood of developing bruxism while awake and/or while sleeping, others seem to have the capacity to lessen bruxism while awake and while sleeping [15]. In addition to the harmful effects of other addictive drugs, studies have revealed that anticonvulsant medications can cause bruxism in children and adolescents with cerebral palsy. Barbiturates were more likely than other anticonvulsants to cause nonspecific bruxism in their patients. At the turn of the century, there were theories that some medications, such as selective serotonin reuptake inhibitors, could result in bruxism. The pathophysiology of sleep-wake bruxism may be rooted in the close relationship between serotonin and dopamine in regulating motor pathways. An overabundance of serotonin at neural synapses can inhibit the release of dopamine, which is necessary for motor function. However, the notion that these medications cause sleep-wake bruxism is not yet sufficiently supported by scientific research. Treatment of bruxism is necessary for serious negative health outcomes, such as significant discomfort in the temporomandibular joints or masticatory muscles, and critical pathological tooth wear [7]. Because bruxism is thought to have positive health effects, there are some circumstances in which it should not be addressed. For example, bruxism can assist prevent obstructive sleep apnea and hypopnea by increasing the patency of the upper respiratory tract while you sleep.

CONCLUSION

The dentist must work with other specialists even though they are an essential member of the bruxism screening team. For the patient to achieve their objectives, an accurate diagnosis of bruxism should be made using the patient's self-report, clinical symptoms, and instrumental studies.

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