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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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TEMPOROMANDIBULAR JOINT DISORDERS AND THE WAY OF THEIR OPTIMIZATION: A LITERATURE REVIEW

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Abstract.

The literature review aims to investigate temporomandibular joint disorders and modern approaches to their treatment. An extensive literature search was performed using Scopus, ScienceDirect, and PubMed databases to identify the most relevant published articles. The year of publication was limited to over the past 5 years. The language was limited to English. More than 200 articles were found and analyzed. At first, abstracts were reviewed. After that 40 of the most relevant articles were selected and included.

Systematical literature revision revealed that temporomandibular joint dysfunction is an essential public health issue worldwide due to its high prevalence and associated incapacity.

Approximately one-third of the adult population worldwide suffers from at least one symptom of temporomandibular joint dysfunction. The etiology of this disease is considered to be multifactorial. Main risk factors include postural and parafunctional habits, several types of traumas, psychological distress, and occlusal factors. Temporomandibular disorder encompasses several pathological conditions. Based on the currently available evidence, chronic pain is frequently observed and results in lower quality of life. Proper diagnosis is crucial for successful treatment planning and outcomes of temporomandibular joint disorders. multidisciplinary treatment for the complete remission of all symptoms should be focused on the pain experience, jaw, and psychosocial functioning of the patients.

Key words. Temporomandibular joint dysfunction, orofacial pain, oral health, healthy lifestyle.

Introduction.

Temporomandibular joint dysfunction is an essential global public health issue due to its high prevalence and associated incapacity. One-third of the adult population is suffering from temporomandibular joint dysfunction worldwide [1]. The term “temporomandibular disorder” describes a group of clinical disorders that are observed in the musculoskeletal components of the masticatory system and has been used since the early 1980s [2]. Approximately one-third of the adult population worldwide meet at least one symptom of temporomandibular joint dysfunction [1].

There is no doubt that the temporomandibular joint is one of the most complex joints in the human body [3].

Temporomandibular disorder encompasses several pathological conditions affecting both: the hard and soft tissues of the joint [4]. Temporomandibular joint dysfunction results from musculoskeletal and temporomandibular joint diseases, often presenting chronic orofacial pain. The etiology of this disease is considered to be multifactorial. Main risk factors include postural and parafunctional habits, several types of traumas, psychological distress, and occlusal factors [5,6]. Several study results show that the prevalence of painful temporomandibular joint disorders is 36% in the age group of 20-49 years. Permanent feeling of pain in the myofascial area leads to limitations in the main daily activities and results in reduced oral health-related quality of life [5]. Based on the currently available evidence, chronic pain is associated with several environmental factors, including socioeconomic conditions. In addition, living with pain results in lower quality of life [7]. Marital status also influences chronic pain in patients with temporomandibular joint dysfunction [8]. Moreover, some studies concluded that modulations in endogenous brainstem pain-modulation circuit functioning are crucial for the promotion and/or sustention of pain [9]. The results of several studies demonstrated that migraine and headache frequency are associated with painful temporomandibular joint disorders in adolescents [10]. Disk derangement pathologies, idiopathic condylar resorption, and osteoarthritis are observed in about 5-12% of the population [11]. Partial or total mandibular condyle displacement might occur due to an imbalance of neuromuscular function or a structural deficit. Luxation is painful and most of the patients need to be treated in emergency rooms [12].

75% of individuals with temporomandibular joint disorders are observed to have serious psychological problems [1,13]. General or local disorders increase risk, however neurological, psychiatric, and rheumatological diseases may influence the function of the temporomandibular joints [14]. Temporomandibular joint disorders might be associated with several systemic diseases, like epileptic seizures which cause transmission of excessive load to the dental arches and temporomandibular joint [14]. New approaches to prosthetic rehabilitation often include changes in vertical occlusal dimension. Raising of vertical occlusal dimension varies from minimum to high and besides facial esthetical changes, often results in changes in temporomandibular joint function. Patients with increased vertical occlusal dimension often report at least temporary signs and symptoms of temporomandibular

joint dysfunction [15,16]. Several study results confirm correlations between awake and sleep bruxism and symptoms of temporomandibular joint dysfunction and pain complaints [17,18]. However, there is no significant evidence: questionnaire studies supported correlations between sleep bruxism and temporomandibular joint dysfunction, but instrumental studies did not [19].

Frequently temporomandibular joint disorders are chronic processes and pathogenesis is not well understood. It can imitate odontogenic pain leading to unnecessary dental treatment and financial burden [20]. The aim of the study is to deeply analyze existing evidence-based information about temporomandibular joint disorders. This will encourage dental practitioners in diagnosing and treating of patients with temporomandibular joint disorders. Besides, this article will demonstrate the gap of existing knowledge and will be an important base for future clinical studies.

Materials and Methods.

Literature Search Strategy:

An extensive literature search was performed using Scopus, ScienceDirect, and PubMed databases. The phrases such as “Temporomandibular joint disorders”, “Temporomandibular joint dysfunction”, “orofacial pain”, “oral health”, “healthy lifestyle”, “Temporomandibular joint treatment”, and “Physical therapy” were searched. The language was limited to English. The year of publication was limited to over the past 5 years in order to capture the most relevant and recent findings. More than 200 articles were found and analyzed.

Inclusion and Exclusion Criteria:

At first, abstracts were reviewed. 40 most relevant articles were selected and included based on their relevance to the topic. Original research, reviews and case reports were incorporated. Exclusion criteria included articles that did not address directly to temporomandibular joint disorders.

Data extraction and analyze:

The most relevant data was extracted about etiology, symptoms, diagnostic methods, pathogenesis, treatment approaches and the ways of optimization of temporomandibular joint disorders. Obtained information was categorized and organized to facilitate previous analyzes, new trends, consensus, and existing knowledge gap in this field.

Results and Discussion.

Etiology:

The etiology of Temporomandibular joint dysfunction is complex [21]. It includes pathological occlusion, bruxism, teeth grinding, oral habits such as nail and lip biting, stress, anxiety, spasms in muscles, inflammation of the joint capsule, and abnormalities of the intraarticular disk [1,22]. Mechanical overloading and genetic vulnerability also are common etiological factors [23].

There is abundant scientific evidence to support the correlation between parafunctional habits and temporomandibular joint dysfunction [22]. Anterior open bite is considered to be the most prevalent type of malocclusion associated with Temporomandibular joint dysfunction [24].

Several types of traumas may cause deformation of the joint. Micro and macro trauma may cause disk displacement without reduction. In this case, the displaced disk from the condyle does not get back to its normal position during the movements of the mandibular. This may result in increased pain in the temporomandibular joint region and limited opening of the mouth. Also, acute, or chronic painful closed locks may be developed according to the duration of locking [25]. Patients with epilepsy are at higher risk of developing temporomandibular joint disorders compared to healthy individuals. Patients diagnosed with epilepsy get antiepileptic drugs, which negatively affect the bone metabolism. Side effects like osteoporosis and osteomalacia lead to the destruction of the periodontium and jaw joint. Such patients often lose their teeth earlier which may result in occlusal inconsistency and joint involvement [14].

Symptoms:

Pain, abnormal movement of the lower jaw, and clicking in the region of the temporomandibular joint are common symptoms of Temporomandibular joint dysfunction, particularly when osteoarthritis occurs [26]. Pain is often observed in front of the ear, cheeks, or temporal area [27,28]. One of the most essential clinical symptoms is muscular pain triggered by palpation which is observed in about 90% of patients [14]. Headache is a very common symptom, particularly Tension-type headache, migraine, and headache associated with temporomandibular joint disorder. In addition, patients often report pain in the cervical area [29]. Sudden onset painful and limited mouth opening is one of the symptoms in patients who experience disk displacement without reduction [30]. As mandibular jaw movements are determined by complex and interrelated activities of both temporomandibular joints, there might occur asymmetries in mandibular movements in patients with temporomandibular joint disorders [31]. Limitations in the movement of the mandibula and the presence of sound while functioning of the joint are often reported by patients with temporomandibular joint disorders [28]. Nonpainful symptoms, such as unpleasantness, tension, soreness, stiffness, or tiredness are also often observed [18].

Diagnosis:

Proper diagnoses are crucial for successful treatment planning and outcomes of temporomandibular joint disorders. Besides crepitus can be detected by palpation which suggests degenerative joint disease, imaging is considered to be an essential diagnostic method. In addition, magnetic resonance imaging is standard for the assessment of disk displacement, also changes in surrounding soft tissues [32]. High resolution of magnetic resonance imaging allows to make difference between tissues of temporomandibular joint components, also to observe anatomy and possible disorders [33]. Cone-beam computed tomography and plain digital radiography are also used for diagnostic reasons. Functional imaging, such as PET or PET-CT imaging is very useful to identify malignant disorders of the joint [20]. Pressure algometry is often used in the diagnosis and is considered to be a reliable measure of pain in joints, muscles, tendons, and ligaments, it is correlated with the degree of myofascial pain. Significantly lower pressure pain threshold

is observed in patients with temporomandibular joint disorders than in patients with muscle tenderness. Special questionnaires are often useful [14]. Limited jaw movements, noises, or locking in the joint are also useful criteria for diagnosing [21]. However, there are several barriers to diagnosing including patients' subjectivity of pain descriptions, variety of symptoms and their overlap, variety in pain experience, radiation of pain, as well as lack of visible findings during clinical and radiographic examination [34].

Pathogenesis:

Temporomandibular joint disorders are considered to be complicated diseases demonstrating various symptoms and pathological changes, including inflammation, degeneration, deviant angiogenesis in joint tissues, and abnormal cell biological behaviors [18]. Pathological changes are closely linked to each other, forming a destructive circle in the joint. Pathogenesis of different sections of the joint involves lots of molecules and signalling pathways, so it may tend to potential targets to support finding effective therapeutic procedures for several kinds of dysfunction. The activation of T-cells provides secretion of various cytokines. Cytokines are involved related with the regulation of autoimmune response, inflammation, and destruction. All chemokines (CXC, CC, C, CX3C) promote joint inflammation. Expending of proteoglycans from articular cartilage leads to degradation of the collagen fibrils. High levels of neutrophil extracellular traps might be observed in synovial tissue. Besides the fact that in-vivo and in-vitro models of temporomandibular joint disorders, including osteoarthritis have been successfully created in several ways, it is urgent to establish models that will be closer to human joints. Modern medical opportunities, including technologies, materials, and treatment approaches, also the role of genetic factors need further investigation [11,26].

Treatment approaches:

Nowadays the preference for Temporomandibular Joint Dysfunction treatment is given to the approach of a multidisciplinary treatment for the complete remission of all symptoms. It should be focused on the pain experience, jaw, and psychosocial functioning of the patients. Reversible conservative therapy is suggested as first line of treatment. This approach is based on the evidence of risks and benefits. In this way remission within the first 6-15 months is observed in most cases [35].

A common approach is treatment using dental occlusion splints, which are selected for patients considering the clinical situation. They correct the alignment of antagonist teeth of the upper and lower jaws. Besides the high cost of non-occluding splints, they are used in several clinical situations for mouth opening, reducing muscle tension, and grinding of teeth [1]. Michigan splint is successfully used in the treatment of painful disorders [36]. Hard acrylic or soft polyethylene occlusion splints are worn on upper or lower teeth and provide full coverage of occlusal surfaces. In addition, physical therapy, acupuncture, or behavioral medicine is often included in the treatment of Temporomandibular Joint Dysfunction [35]. Unfortunately, removable splints are not applicable in patients

with frequent epileptic seizures due to the increased risk of aspiration [14]. The common approach to treatment includes conservative treatment, physical movement exercise, and laser therapy particularly. Physical therapy reduces pain, recovers motor functions, improves mobility, reduces inflammation, and relieves the symptoms. This type of treatment includes various exercises: Recabado, Goldfish, range of motion exercises, joint mobilization, and soft tissue mobilization. However, in the case of osteoarthritis, treatment with current conservative therapy might be ineffective and lead to limitations in jaw movement [26]. Exercises of the cervical spine inhibit complaints of pain in patients with temporomandibular joint disorders and headaches. However, home exercises might not be so effective, and it is considered that at least one supervised training should be done to get optimal outcomes that will last longer [29]. Acupuncture treatment is also used to improve the occlusal force and relieve pain. A traditional medical intervention – acupuncture influences the neuromuscular activity of an activated muscle, so it has an opportunity to change the tension within the muscle and promote relaxation and elongation [37,38].

Botulism toxin type A is considered to be a successful treatment approach for muscle spasms and myofascial pain in patients with TMD. This method not only avoids pain but provides prolonged pain relief which may last for 3-6 months. Inhibition of muscular activity results in pain reduction. Botulism toxin type A also influences pain neurotransmitters and inflammatory mediators [39]. In patients with a wide range of disorders reconstruction with biocompatible alloplastic prosthesis is indicated [40]. Cooperation between dentists and neurologists is often useful, particularly in patients with epilepsy disease [14].

Optimization:

Temporomandibular joint disorders might be associated with several factors and also management of those disorders is not the same. So, the clinician dentist, or medical clinician have to decide what kind of diagnostics and treatment approaches will be optimal for each patient. Hence, there are three key determinants for the optimization of temporomandibular joint dysfunction: proper knowledge, training, and experience [1].

Conclusion.

Temporomandibular joint disorders remain to be a huge problem worldwide. Lots of people in several age groups suffer from symptoms of this disorder. The etiology is complex. Symptoms are various kinds and often result in a lower quality of life. Proper diagnosis is crucial for successful treatment planning and outcomes of temporomandibular joint disorders. Multidisciplinary treatment for the complete remission of all symptoms should be focused on the pain experience, jaw, and psychosocial functioning of the patients. There are three key determinants for the optimization of temporomandibular joint dysfunction: proper knowledge, training, and experience of the clinician.

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Summary

Temporomandibular joint disorders and the way of optimization: a literature review

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The literature review aims to investigate Temporomandibular joint disorders and modern approaches to their treatment. An extensive literature search was performed using Scopus, ScienceDirect, and PubMed databases to identify the most relevant published articles. The year of publication was limited to over the past 5 years. The language was limited to English. More than 200 articles were found and analyzed. At first, abstracts were reviewed. After that 40 most relevant articles were selected and included.

Systematical literature revision revealed that temporomandibular joint dysfunction is an essential public health issue worldwide due to its high prevalence and associated incapacity.

Approximately one-third of the adult population worldwide suffers from at least one symptom of temporomandibular joint dysfunction. The etiology of this disease is considered

to be multifactorial. Main risk factors include postural and parafunctional habits, several types of traumas, psychological distress, and occlusal factors. Temporomandibular disorder encompasses several pathological conditions. Based on the currently available evidence, chronic pain is frequently observed and results in lower quality of life. Proper diagnosis is crucial for successful treatment planning and outcomes of temporomandibular joint disorders. multidisciplinary treatment for the complete remission of all symptoms should be focused on the pain experience, jaw, and psychosocial functioning of the patients.

Keywords: Temporomandibular joint dysfunction, orofacial pain, oral health, healthy lifestyle

რეზიუმე

საფეთქელ-ქვედა ყბის სახსრის დარღვევები და მათი ოპტიმიზაციის გზები: ლიტერატურის მიმოხილვა

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ი. ჯავახიშვილის სახელობის თბილისის სახელმწიფო უნივერსიტეტი

კვლევის მიზანს წარმოადგენდა საფეთქელ-ქვედა ყბის სახსრის დარღვევების შესწავლა და მათი მკურნალობის თანამედროვე მიდგომების გამოვლენა. ლიტერატურის მიმოხილვა განხორციელდა Scopus, ScienceDirect და PubMed სამეცნიერო ბაზების გამოყენებით, რათა მოგვეძიებია შესაბამისი სამეცნიერო პუბლიკაციები. შეირჩა ბოლო 5 წლის მანძილზე გამოქვეყნებული ინგლისურენოვანი სტატიები. მოძიებული იქნა 200-ზე მეტი სტატია. პირველ ეტაპზე განხილული იქნა რელევანტური სტატიების აბსტრაქტები, ამის შემდეგ შეირჩა ყველაზე შესაბამისი 40 სტატია. მიღებული მონაცემები საფუძვლიანად გაანალიზდა და დადგინდა, რომ საფეთქელ-ქვედა ყბის სახსრის დარღვევები მნიშვნელოვან პრობლემას წარმოადგენს მსოფლიოში მისი გავრცელების მაღალი მაჩვენებლისა და მასთან დაკავშირებული შეზღუდვების გამო. მსოფლიოს ზრდასრული მოსახლეობის დაახლოებით მესამედი იტანჯება საფეთქელ-ქვედა ყბის სახსრის დისფუნქციის სულ მცირე ერთი სიმპტომით. ეს არის მულტიეტოლოგიური და ძირითად რისკ ფაქტორებს წარმოადგენენ პარაფუნქციური მავნე ჩვევები, სხვადასხვა ტრავმები, ფსიქოლოგიური სტრესი და ოკლუზიური ფაქტორები. საფეთქელ-ქვედა ყბის სახსრის დისფუნქცია აერთიანებს სხვადასხვა პათოლოგიურ მდგომარეობას. არსებული მტკიცებით მონაცემების მიხედვით, ხშირად აღინიშნება ტკივილი რაც ამცრებს ინდივიდის ცხოვრების ხარისხს. ზუსტი დიაგნოზი აუცილებელია მკურნალობის გეგმის შემუშავებისა და ოპტიმალური პროგნოზისთვის. კომპლექსური მკურნალობა სიმპტომების რემისიის მიზნით, მიმართლი უნდა იყოს ტკივილის შემსუბუქებაზე, პაციენტის ყბისა და ფსიქოსოციალური ფუნქციების აღდგენაზე.

Резюме

Обзор литературы: Заболевания височно-нижнечелюстного сустава и пути их оптимизации

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Цель исследования - выявление современных подходов к обследованию заболеваний височно-нижнечелюстного сустава и выявление современных методов их лечению. Для поиска актуальных научных публикаций обзор литературы проводился с использованием научных баз данных Scopus, ScienceDirect и PubMed для поиска актуальных научных публикаций. Были выбраны англоязычные статьи, опубликованные за последние 5 лет. Найдено более 200 статей. На первом этапе были рассмотрены тезисы ревалентных статей, после чего были отобраны 40 наиболее актуальных статей. Доступные данные были тщательно проанализированы и установлено, что заболевания

височно-нижнечелюстного сустава является серьёзной проблемой во всём мире с высокой распространённостью и связанными с ней ограничениями. Примерно треть взрослого населения мира страдает, по крайней мере, от одного симптома дисфункции височно-нижнечелюстного сустава. Дисфункция мультиэтиологична и основными факторами риска являются парафункциональные вредные привычки, различные травмы, психологический стресс и окклюзионные факторы. Дисфункция височно-нижнечелюстного сустава сочетается с другими патологическими состояниями. По имеющимся данным, часто существует боль, снижающая качество жизни индивида. Точная диагностика необходима для разработки плана лечения и оптимального прогноза. Комплексное лечение для ремиссии симптомов должно быть направлено на облегчение болевого синдрома, на восстановление челюстной и психосоциальной функции пациента.