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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.

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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.

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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. რენტგენოგრაფიების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგების 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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ORTHODONTIC TREATMENT ALGORITHM OF PATIENTS WITH A BURDENED DRUG ANAMNESIS. DRUGS THAT REDUCE BONE MINERAL DENSITY

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Abstract.

The large number of drugs available today for the treatment of various general somatic conditions poses the challenge of studying both the positive and negative effects of drugs on orthodontic tooth movement. To improve the efficiency, safety and quality of treatment, an orthodontic care algorithm has been developed for patients taking glucocorticoids (GCS), drugs for the treatment of diabetes mellitus (thiazolidinediones and SGLT-2 inhibitors), L-thyroxine, immunosuppressors, antidepressants, anticonvulsants, proton pump inhibitors (PPIs), misoprostol (copyright database IREG deposit certificate No. 2089354).

Out of 348 patients, who came for consultation and orthodontic treatment, 48 patients (13,8%), according to the algorithm, the active treatment and retention plans, appliance activation were adjusted taking into account the positive drug anamnesis. 9 patients were referred for consultations with doctors of other medical specialties to receive an information about general disease compensation degree, bone mineral density measurement and identification of possible contraindications for orthodontic treatment.

Key words. Anamnesis, orthodontic treatment, medications.

Introduction.

Numerous studies showed that different types of malocclusion are one of the most common maxillofacial pathology. Their frequency of occurrence ranges from 11 to 74%, depending on the region and age group [1,2].

Over 60% of children and adults who came for consultation and orthodontic treatment take medications or nutritional supplements on a regular basis [3].

A wide range of drugs available today for the treatment of various general somatic conditions poses the challenge of studying both the positive and negative effects of drugs on orthodontic tooth movement [4].

Orthodontic tooth movement is a well-studied process; however, it is not uncommon for an orthodontist to come across some difficulties during orthodontic treatment, the cause of which may not be obvious. The correct interpretation of the drug anamnesis and the development of a standard treatment plan for patients with a burdened drug anamnesis will improve the quality of treatment, will help to achieve a good clinical results and reduce the frequency of relapse.

Side effects of many drugs can manifest themselves in the oral cavity in the form of xerostomia, erosive and ulcerative lesions, gingival hypertrophy, etc. [5]. All this can also significantly complicate orthodontic treatment.

Wide range of medications can influence bone metabolism. Despite the relevance of the problem, there is no clear orthodontic treatment algorithm of patients, taking bone mineral

density (BMD) reducing drugs on regular basis. Additional diagnostic procedures and necessary consultations with related medical specialists are not defined.

The aims of the study.

1. To analyze scientific literature on the effect of drugs on bone metabolism and orthodontic treatment outcome.
2. On the base of literature review to develop an orthodontic treatment algorithm for the patients taking BMD reducing drugs on regular basis.
3. To test the algorithm in clinical practice (to calculate the percentage of patients with burden drug history in routine orthodontic practice; to find the most commonly prescribed drugs which could reduce BMD; to check the distribution of the patients within decision tree leaf (ending states).

Materials and Methods.

An electronic search of published meta-analyzes, systematic reviews, case reports, clinical and experimental studies included in databases (Cochrane Library, EMBASE and MEDLINE, Web of Science) was made using the following search terms in titles and abstracts: «orthodontic treatment»; «orthodontic tooth movement»; «drugs and bone metabolism»; «medications side effects»; «medications/oral health».

The search depth was 10 years. References from the found articles were scanned for additional relevant publications. The criteria for selecting published scientific studies are described in detail earlier [6].

All medications mentioned in this articles, and it possible side effects, which could have a negative impact on orthodontic tooth movement were included in orthodontic treatment algorithm.

General information on the medications and their effects derived from the following web sites: <https://www.vidal.ru>, <https://www.rlsnet.ru>. 348 patients (age 5 - 53 years) with any type of malocclusion were included in clinical part of our research. Anamnesis collection was made with an emphasis on drug intake history. The percentage of patients taking medications on regular basis with potential to reduce BMD was calculated and patients distribution according to the algorithm was verified.

Results.

The total number of articles found was 144. Based on latest literature review, an orthodontic treatment algorithm was developed for the patients taking drugs, reducing BMD, on regular basis (copyright database IREG deposit certificate No. 2089354). The algorithm provides clinical recommendations during active treatment and retention period for the patients taking following drugs: glucocorticoids (GCS), drugs for the treatment of diabetes mellitus (thiazolidinediones and SGLT-2 inhibitors), L-thyroxine, immunosuppressors, antidepressants, anticonvulsants, proton pump inhibitors (PPIs), misoprostol.

The algorithm is a graphic scheme, which allows the physician quickly to determine which actions should be performed at each stage of treatment. An accurate and logical algorithm scheme should help to reduce the frequency of medical errors (Figure 1).

Among 348 patients drug anamnesis collection revealed 48 patients (13.8%) 14 to 56 years of age who regularly take BMD reducing drugs. Of them, 27 patients (56.2%) regularly used corticosteroids in the form of ointments, sprays, inhalations or per os. 8 patients (16.7%) took L-thyroxine on a regular basis, 7 people (14.6%) - antidepressants, 4 people (8.3%) - PPIs. 1

patient each reported taking an anticonvulsant drug (2.1%) and immunosuppressive therapy (2.1%). (Figure 2).

According to the algorithm, during active orthodontic treatment of all patients with possible reduction of BMD, light force application and reduced interval between activations were recommended. However, this category of patients needs prolonged retention.

Due to the widespread use of corticosteroids, the presence of various forms of release, a wide range of both positive and negative effects, we have developed separate orthodontic treatment algorithms for patients taking corticosteroids [7].

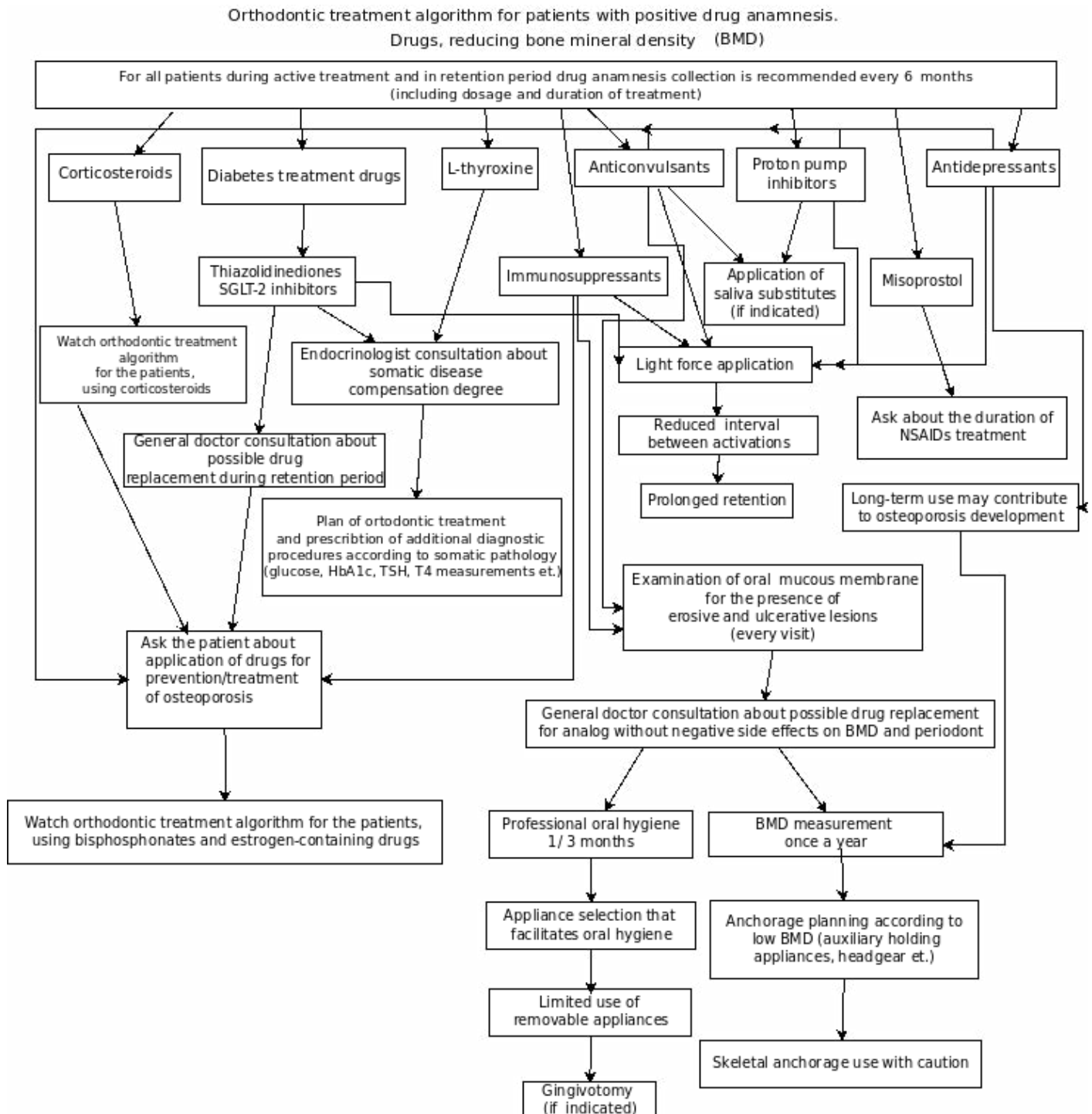


Figure 1. The orthodontic treatment algorithm of patients with burdened drug anamnesis. Drugs that reduce bone mineral density.

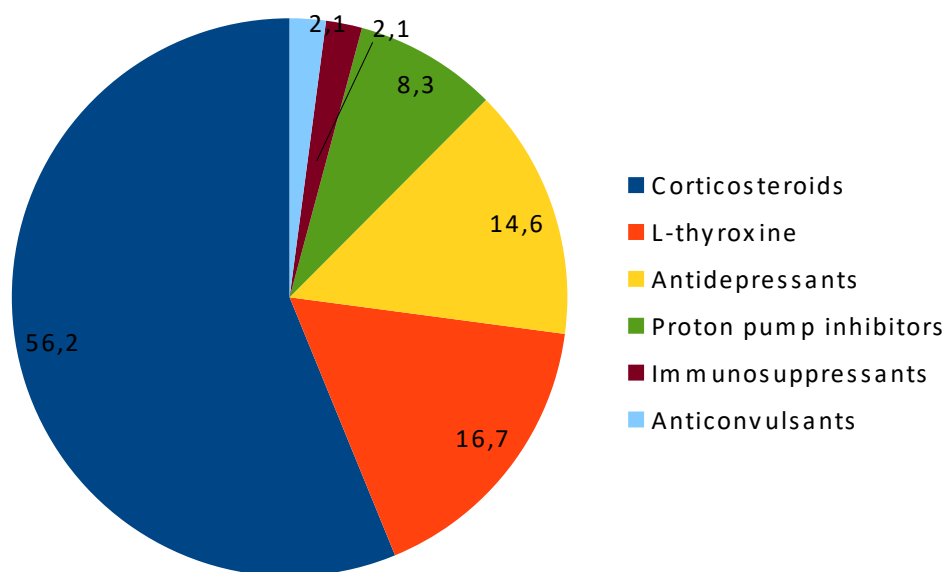


Figure 2. The number of patients taking medications on regular basis that can reduce BMD (in %).

8 patients taking L-thyroxine were referred for a consultation with an endocrinologist in order to determine TSH, T₄ levels and obtain an information about compensation degree of the somatic disease. All patients showed optimal TSH level, and no overdose of L-thyroxine was detected. For such patients, orthodontic treatment can be carried out without restrictions.

In our study, all patients (7 people) taking antidepressants were under the age of 40 years. With long-term use and with the appearance of other factors (for example, age, postmenopausal period, etc.) that contribute to the osteoporosis development, it is recommended BMD measurement once a year.

Immunosuppressive therapy and anticonvulsants can cause erosive or ulcerative mucosal lesions and hypertrophic gingivitis. In our study, patients taking these drugs had a mucosal examination every visit. Erosions on the mucosa, which have arisen under the influence of pharmaceutical agents, must be differentiated from a traumatic lesion of the mucous membrane with orthodontic appliance. If such complications are detected, a consultation with a general doctor is indicated with the question of a possible drug replacement with an analogue that does not affect the mucous membrane and periodontal tissues.

One patient with systemic lupus erythematosus regularly took hydroxychloroquine. The patient was referred for BMD measurement in order to determine the possible use of a cortical anchorage and to plan a retention period.

Discussion.

The results of the present research revealed, that 13,8% patients have burdened drug anamnesis and use drugs with potential to reduce BMD. Distribution of the patients involved almost all parts of the algorithm. For each decision tree leaf (ending states) there are references that prove practical recommendations for active orthodontic treatment and retention period.

Osteoporosis severity directly depends on the duration and dosage of glucocorticoids used. During the first year of glucocorticoids treatment, up to 12% of bone loss is detected. Later, this process slows down to 2-3% per year [8]. During

active orthodontic treatment, due to the increased bone resorption, the speed of tooth movement increases, however, a decrease in the new bone formation rate leads to an unstable result and a rapid relapse, up to 100% loss of treatment result [9].

The use of thiazolidinediones for glycemic control increases number of adipocytes, leads to a gradual replacement of the bone marrow with adipose tissue, reduces osteoblastogenesis and stimulates osteoclastogenesis. With prolonged use, thiazolidinediones increase concentration of bone resorption markers, decrease BMD, and violate its microarchitecture [10,11].

Inhibitors of the sodium-dependent glucose transporter type 2 or flozins contribute to weight loss and change phosphorus-calcium homeostasis due to increased calcium excretion, which inevitably leads to increased bone resorption and decreased mineral density [12,13].

The use of thyroid hormones for TSH reduction can provoke subclinical hyperthyroidism, which, in turn, can worsen BMD values [14]. The administration of L-thyroxine in large doses increases osteoclast activity and prostaglandin synthesis, which accelerate bone resorption and could promote osteoporosis development [15].

During orthodontic treatment planning for patients with endocrine pathology, it is very important to estimate the level of somatic disease compensation (for diabetes- glucose and HbA1c values, for thyroid diseases - TSH and T₄ values).

One of the immunosuppressants side effects is a skeleton atrophy, including the maxillofacial region. Immunosuppressants decrease bone volume, increase the number of osteoclasts, and decrease the number of osteoblasts [16]. The second indirect mechanism of action on bone tissue is an alteration of vitamin D and osteocalcin metabolism, which leads to the development of secondary hyperparathyroidism and osteopenia. The severity of side effects directly depends on the dosage and duration of immunosuppressant treatment [17].

Anticonvulsants are used not only for the treatment of epilepsy, but also as part of the complex therapy of migraine,

mental disorders, neuropathy, and chronic pain [18]. Many drugs in this group inactivate vitamin D and promote its catabolism, which leads to impaired absorption of calcium from the gastrointestinal tract. Long-term use of anticonvulsants contributes to the development of serious side effects on the skeletal system (osteomalacia, osteoporosis, increased risk of fractures and delay growth in children) [17,19].

The use of PPIs is associated with an increased risk of pathological fractures and osteoporosis development, especially with long-term use of high doses. Thus, according to Lau Y. (2012) [20], after one year of regular PPI intake, the risk of fractures increases up to 60%. One of the mechanisms of action may be a decrease in calcium absorption, leading to hypocalcemia, and, subsequently, to osteoporosis [21].

Antidepressants are among the most prescribed drugs and are used for the treatment of depression, phobias, bipolar, obsessive-compulsive disorders, peripheral neuropathy, fibromyalgia, chronic pain syndrome, etc. [17]. A side effect on skeletal system is expressed in an increased rate of bone loss and a decrease in its mineral density [22].

Misoprostol, being a synthetic analogue of prostaglandin E₁, can significantly accelerate orthodontic tooth movement. This drug is prescribed to protect the gastrointestinal mucosa during long-term use of NSAIDs. For patients using misoprostol, it is necessary to specify the type of general somatic pathology and the length of treatment with NSAIDs. If indicated, the treatment can be adjusted according to the orthodontic treatment algorithm for patients taking NSAIDs on regular basis [6].

Pathological side effects of a wide range of drugs on BMD is well known. General doctors in parallel with the treatment of underlying disease, may prescribe to the patient osteoporosis preventing drugs and / or nutritional supplements. When planning treatment, an orthodontist should take into account the possible use by a patient of drugs that increase BMD (see specialized orthodontic care algorithm for the patients taking drugs that slow down bone metabolism) [6].

Certain drugs (immunosuppressants and anticonvulsants) may produce hypertrophic gingivitis. When such a complication occurs during orthodontic treatment, patients are recommended professional oral hygiene once every 3 months, the choice of appliance that facilitates oral hygiene as much as possible (self-ligating braces, fixation of molar tubes instead of bands, etc.). In some cases, gingivotomy is indicated. It is also necessary to take into account the possible unsatisfactory fixation of removable appliances.

Anticonvulsants and PPIs may cause xerostomia, which will complicate oral hygiene, increase the risk of caries and mucosal trauma during orthodontic treatment. When patients complained of dry mouth, we prescribed saliva substitutes.

If cortical support or removable appliances are needed during active orthodontic treatment as well as improvement stability of treatment results during retention period, consultations with related medical specialists are necessary to determine the possible complete drug withdrawal or the choice of an alternative without negative effect on skeleton and periodontal health.

Conclusion.

1. The analysis of published scientific studies has revealed a wide range of drugs with capacity to reduce BMD.

2. Orthodontic treatment algorithm contains practical recommendations for orthodontic treatment and additional diagnostic procedures for the patients taking on regular basis glucocorticoids (GCS), drugs for the treatment of diabetes mellitus (thiazolidinediones and SGLT-2 inhibitors), L-thyroxine, immunosuppressors, antidepressants, anticonvulsants, proton pump inhibitors (PPIs), misoprostol (copyright database IREG deposit certificate № 2089354).

3. 13,8% patients used on regular basis drugs with potential to reduce BMD. The result of the study showed patients distribution within almost all branches of the algorithm. The most frequently prescribed medications were corticosteroids, L-thyroxine, and antidepressants.

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Тезисы.

Большой ассортимент лекарственных препаратов, доступных сегодня для лечения различных общесоматических состояний, ставит задачу изучения как положительных, так и негативных эффектов медикаментов на ортодонтическое перемещение зубов. Для повышения эффективности, безопасности и качества лечения на основании систематических обзоров и мета-анализов разработан алгоритм ортодонтической помощи пациентам, принимающим на постоянной основе глюкокортикоиды (ГКС), препараты для лечения сахарного диабета (тиазолидиндионы и ингибиторы SGLT-2), L-тироксин, иммуносупрессоры, антидепрессанты, антиконвульсанты, ингибиторы протонной помпы (ИПП), мизопростол (св-во о депонировании № 2089354).

При использовании предложенного алгоритма для 48 пациентов (13,8%) план ортодонтического лечения, режим

активации аппаратуры и планирование ретенционного периода были скорректированы с учетом отягощенного лекарственного анамнеза. Из них 9 пациентов (18,7% человек) были направлены на консультации к специалистам лечебного профиля с вопросом о степени компенсации основного заболевания, определения МПК с целью выявления возможных противопоказаний к ортодонтическому лечению.

Ключевые слова: анамнез, ортодонтическое лечение, лекарственные препараты.

თეზისები.

მედიკამენტების დიდი ასორტიმენტი, რომლებიც დღეს ხელმისაწვდომია სხვადასხვა ზოგადი სომატური მდგომარეობის სამკურნალოდ, წარმოადგენს ორთოდონტიულ კბილის მოძრაობაზე წამლების დადებითი და უარყოფითი ეფექტების შესწავლის გამოწვევას. მკურნალობის ეფექტურობის, უსაფრთხოებისა და ხარისხის გასაუმჯობესებლად, სისტემატური მიმოხილვებისა და მეტაანალიზების საფუძველზე, შემუშავდა ორთოდონტიული მოვლის ალგორითმი პაციენტებისთვის, რომლებიც იღებენ გლუკოკორტიკოიდებს (GCS), შაქრიანი დიაბეტის სამკურნალო პრეპარატებს (თიაზოლიდინედიონები და SGLT-2 ინჰიბიტორები), L-თიროქსინი, იმუნოსუპრესორები, ანტიდეპრესანტები, ანტიკონვულსანტები, პროტონული ტუმბოს ინჰიბიტორები (PPIs), მიზოპროსტოლი (დეპონიტი No. 2089354).

შემოთავაზებული ალგორითმის გამოყენებისას 48 პაციენტისთვის (13,8%) ორთოდონტიული მკურნალობის გეგმა, აღჭურვილობის აქტივაციის რეჟიმი და შეკავების პერიოდის დაგეგმვა მორგებული იყო წამლის გამწვავებული ისტორიის გათვალისწინებით. მათგან 9 პაციენტი (18,7% ადამიანი) მიმართეს კონსულტაციას სპეციალისტებთან მკურნალობის პროფილის საკითხთან დაკავშირებით ძირითადი დაავადების კომპენსაციის ხარისხის, BMD-ის განსაზღვრის მიზნით ორთოდონტიული მკურნალობის შესაძლო უკუჩვენებების იდენტიფიცირების მიზნით.

საკვანძო სიტყვები: სამედიცინო ისტორია, ორთოდონტიული მკურნალობა, მედიკამენტები.