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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 ВИНИТИ 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 ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

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. Корректура авторам не высылается, 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 compu-ter-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 საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ 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 შეღებვის 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 ფჩხილებში 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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STUDY OF BONE RESORPTION AS A RISK FACTOR IN DENTAL IMPLANTATION IN PATIENTS WITH GENERALIZED PERIODONTITIS

Prots H1, Rozhko M[2], Paliichuk I[2], Nychyporchuk H[2], Prots I[3].

[1]*Department of Surgical Dentistry, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine.*

[2]*Department of Dentistry, Institute of Postgraduate Education, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine.*

[3]*Clinic NeoKar, Ivano-Frankivsk, Ukraine.*

Abstract.

The method of dental implantation in patients with generalized periodontitis is one of the priority areas requiring in-depth study. The aim of the study was to increase the efficiency of dental implantation by developing methods for eliminating bone resorption in patients with generalized periodontitis. There were examined 240 patients with generalized periodontitis of I, II, III degree of development with partial adentia of the upper and lower jaws, who later underwent comprehensive periodontal treatment using dental implantation methods. There were used radiological, densitometric and clinical research methods. The lowest rates of bone resorption in patients with 24 months development with reduced bone mineral density, which was carried out in stages periodontal treatment, followed by dental implantation and one-staged periodontal treatment and dental implantation - (0.69 ± 0.006) mm, (0.74 ± 0.006) mm, respectively. Conclusions: The highest level of resorption was observed in patients with generalized periodontitis of III degree of development with reduced bone mineral density, who underwent one-staged periodontal treatment and dental implantation - (4.27 ± 0.06) mm compared with patients with generalized periodontitis of I, II degree of development. - (0.74 ± 0.006) mm, (2.41 ± 0.006) mm, ($p < 0.05$).

Key words. Generalized periodontitis, dental implants, structural-functional state of bone tissue, resorption of bone tissue.

List of abbreviations. DI: Day Implantation; GP: Generalized Periodontitis; PT: Periodontal Treatment; BMD: Bone Mineral Density.

Introduction.

Dental implantation (DI) remains one of the leading methods for replacing dentition defects due to generalized periodontitis (GP), aimed notonly at restoring masticatory efficiency, but also at obtaining a highly predictable result of prosthetic rehabilitation data [1-3]. As a result of redistribution of loads on teeth and implantation, reduction or exclusion of a periodontal injury, atrophy without retention of sites of a jaw during this functional overload is slowed down in 2-3 times.

However, the new protocols do not reduce the risk of complications and the tendency to develop peri-implantitis and reduce osteogenic potential, do not take into account destructive processes in periodontal tissues, which are closely related to the structural and functional state of the skeletal system, metabolic activity and skeletal bone remodeling intensity [4-6].

Thus, one of the priority areas that require further in-depth study is the use of the DI method in patients with GP and the task of DI is not only to expand the indications for the use of dental implants, to increase their use to eliminate defects and restore dentition, but also to reduce and prevent complications that occur during surgery and subsequent treatment [7,8,9]. The problem of preventing jaw bone atrophy remains extremely relevant today, as resorption processes occurring in tissues, especially in patients with GP, are irreversible and often disrupt the successful osseointegration of implants [12, 13], and is one of the main causes of disintegration and implant removal.

After all, the minimum loss of bone tissue in the first year of operation of the implant is considered one of the criteria for the success of DI [14,15]. The development of an optimized algorithm for DI in patients with GP, taking into account bone mineral density (BMD) will predict bone resorption and correct the course of reparative osteogenesis to prevent implant loss, which determines the relevance of the study.

Aim of the study.

To increase the efficiency of dental implantation by developing methods for eliminating bone resorption in patients with generalized periodontitis.

Materials and Methods.

We examined 240 patients aged 27-70 years, of which 140 (58.3%) women and 100 (41.7%) men, with GP I, II, III degree of development with partial adentia of the upper and lower jaws, who were subsequently carried out comprehensive periodontal treatment (PT) using DI methods. The severity criteria of GP were assessed by the depth of periodontal pockets and severity of destructive processes in bone tissue. GP of the 1st degree of severity - the depth of the periodontal pocket does not exceed 3.5 mm, and the destructive processes do not exceed a third of the tooth root. GP of the 2nd degree of severity - the depth of the periodontal pocket does not exceed 5 mm, and the destructive processes - half of the root. GP of the 3rd degree of severity – the depth of the periodontal pocket exceeds 5 mm, and destructive processes make up more than half of the root.

503 titanium implants of the Entegra type (Innova, Canada), Alpha-Bio, MIS (Israel), Straumann (Switzerland) were installed, of which 338 implants - during a one-staged DI with a surgical PT and 265 - during a staged PT and subsequent DI.

To assess the resorption of bone tissue, radiological methods were performed to examine the condition of periodontal tissues (orthopantomogram, computed tomography). In patients, resorptive changes of bone tissue of alveolar processes and destructive processes of varying severity in the periodontium were detected [15] and the dynamics of bone resorption in the area of the implant neck after 6, 12, 24 months was evaluated.

The decrease in bone mineral density (BMD) was assessed by two-photon X-ray absorptiometry on a Chelenger densitometer

(LCA-France) [16]. Assessment of the structural and functional state of bone tissue was performed by determining markers of bone metabolism that respond faster than densitometry. The most specific marker of bone formation is osteocalcin, for the quantification of which in the blood serum was used enzyme-linked immunosorbent test Nordic Bioscience Diagnostics A / S N-MID Osteocalcin ELISA (Denmark). A highly sensitive and specific marker of resorption is dioxypyridinoline, the level of which in the urine was determined by enzyme-linked immunosorbent test using the DPD EIA KIT (USA) [17].

Щільність кісткової тканини визначали за шкалою Хаунсфілда. Різні типи нормальної кісткової тканини мають щільність 350-1250 ОХ і залежно від діапазону характеризують 4 типу кістки.

Patients underwent a staged PT followed by DI and surgery on periodontal tissues and DI was performed in one stage [18].

In the gradual treatment of DI was performed no sooner than 3 months after periodontal intervention after the elimination of inflammatory phenomena and stabilization of periodontal tissues. Prosthetic treatment was performed after 3-6 months, the period from the beginning of treatment to prosthetics averaged at least 9 months.

One-stage surgery was performed after rehabilitation of the oral cavity. Firstly, we performed an operation with curettage of bone pockets, vestibuloplasty, frenuloplasty, our proposed patch surgery using a bone marrow autograft and an osteogenic drug [18], prepared a bed for the implant, taking into account the volume of the bone of the atrophied implant in the alveolar bone. One-staged surgery on periodontal tissues and DI reduced the duration of treatment by 1.5-2 times.

In the postoperative period, all patients were prescribed anti-inflammatory, detoxification, analgesic therapy. Clinical studies were performed in the dynamics before and after surgery at 6, 12, 24 months. 240 patients with GP I, II, III degree of development, who were subsequently treated with periodontal tissues using DI methods, were divided into groups:

1 group: 107 patients with GP of the I degree of development, from them 50 (46,73%) patients carried out one-staged DI with surgical PT, and 57 (53,27%) patients - staged PT with the subsequent carrying out DI;

Group 2: 97 patients with GP of the II degree of development, of which 48 (49.48%) patients underwent one-staged DI with surgical PT, and 49 (50, 52%) patients - staged PT and DI;

Group 3: 36 patients with GP III degree of development, of which 9 (25%) patients - refused implantation due to significant bone resorption, 15 (41.67%) patients underwent staged PT followed by DI, and 12 (33.33 %) patients - one-staged PT and placing the dental implants.

Results.

According to the results of X-ray osteodensitometry it was found that:

Of the 50 patients of group 1 on GP of the I degree of development, who underwent one-staged PT and DI, in 33 (30.84%) patients with BMD - within normal limits, in 17 (15.89%) - reduced BMD, and of 57 patients on GP of the I degree of development, which was performed in stages with the subsequent DI, in 31 (28.97%) patients - BMD within normal limits, and in 26 (24.30%) patients - decreased BMD. Thus, only 59.81% of patients with GP of the I degree of development underwent surgery on the background of normal BMD.

Of the 48 patients of group 2 with GP of the II degree of development, who underwent one-staged PT and DI, 23 (23.71%) patients with BMD - within normal limits, 25 (25.77%) - reduced BMD, and 49 patients on GP of the II degree of development, which was performed in stages with subsequent DI in 27 (27.84%) patients - BMD within normal limits, in 22 (22.68%) patients - reduced BMD.

Thus, only 51.55% of patients with GP of the II degree of development underwent surgery against the background of normal BMD.

Out of 12 patients with GP of the III degree of development of the 3rd group, who underwent one-staged PT and DI, in 4 (11.11%) patients the BMD was within the norm, in 8 (22.22%) it was reduced. Of the 15 patients with GP of the III degree of development, who underwent a staged PT with subsequent DI, in 9 (25%) patients - BMD within normal limits, in 6 (16.67%) patients - decreased. 9 patients of group 3 were denied implantation due to significant bone resorption, of which only 1 (2.78%) patient had BMD within normal limits, and 8 (22.22%) patients had reduced BMD. These patients had their periodontal teeth removed and alveolar bone was augmented for further DI.

Thus, only in 38.89% of patients with GP III stage of development of group 3, surgery was performed on the background of normal BMD.

При вивченні метаболізму кісткової тканини виявлено, що у 128 (53,4 %) хворих із нормальною МЩКТ виявлено нормальні показники остеокальцину, що свідчили про високі темпи кісткоутворення – (22,86±2,24) нг/мл та незначне підвищення показника маркера резорбції, що обумовлюють невисокі темпи розсмоктування кісткової тканини – (8,56±1,3) н/моль. Цим хворим не призначались остеотропні препарати.

У 98 (40,8 %) хворих, МЩКТ яких відповідала остеопенії, відмічали незначно знижені показники кісткоутворення – (20,34±1,23) нг/мл та підвищені показники розсмоктування кістки – (12,86±1,34) н/моль, що слугувало показом до призначення антирезорбенту – «Кальцій D_3 Нікомеду» по 1табл. 2 рази на добу протягом 3 місяців.

У 14 (5,8 %) хворих, МЩКТ яких відповідала остеопорозу, спостерігалося пригнічення процесів кісткоутворення – (18,32±2,08) нг/мл та збільшення показників резорбції – (15,48±1,23) н/моль. Даним хворим призначали препарати, що стимулюють кісткоутворення та зменшують розсмоктування кістки – «Остеогенон» по 1 табл. 2 рази на добу протягом 3 місяців.

За результатами досліджень маркерів кісткового ремоделювання у хворих на ГП зі зниженою МЩКТ через 12 місяців після оперативного втручання і назначеного нами лікування показник остеокальцину значно зростав і у хворих з остеопенією – (24,72±2,3) нг/мл порівняно з вихідним рівнем до операції – (20,34±1,23) нг/мл ($p<0,05$), і в хворих з остеопорозом – (19,87±1,97) нг/мл, порівняно з вихідним рівнем до операції – (18,32 ±2,08) нг/мл .

Аналіз результатів показників діоксипіридиноліну також дозволив виявити позитивну динаміку показників

кісткового метаболізму після хірургічного лікування. Так, у хворих із остеопенією показник значно зменшився – (9,32±1,32) н/моль, порівняно з вихідним рівнем до операції – (12,86±1,34) н/моль. У хворих із остеопорозом також спостерігалося зменшення даного показника до (13,27±1,4) н/моль, порівняно з вихідним рівнем до операції – (15,48±1,23) н/моль.

To study the resorption of bone tissue in the neck of the implants, an analysis of radiological data was performed 6, 12, 24 months after the placing of dental implants in patients with normal and reduced BMD.

Thus, 6 months after the placing of dental implants in patients with normal BMD, the lowest level of bone resorption was observed in patients with GP I stage of development of group 1 - (0.34 ± 0.008) mm, who underwent staged PT with subsequent DI, compared with patients of the same group, who underwent one-staged PT and DI - (0.42 ± 0.006) mm and with patients with GP of the II degree of severity of group 2, who underwent staged PT with subsequent DI (0.56 ± 0.008) mm and one-staged PT and DI - (0.77 ± 0.005) mm. The highest level of resorption was observed in patients with GP III stage of development of group 3, who underwent one-staged PT and DI - (2.16 ± 0.01) mm ($p < 0.05$). After 12 months of follow-up, the lowest level of bone resorption was found in patients with GP of I degree of development with normal BMD of group 1 - (0.41 ± 0.008) mm, who underwent staged PT with subsequent DI. The above level of bone resorption was statistically different from the values of patients of the same group, who underwent one-staged PT and DI - (0.53 ± 0.008) mm and from patients with GP II stage of development of group 2, who underwent staged PT with subsequent DI and one-staged PT and DI - (0.73 ± 0.007) mm, (1.04 ± 0.006) mm ($p < 0.05$). Bone resorption during the observation period after 12 months continued to progress in patients with GP stage III development of group 3 and was the highest in patients who underwent one-staged PT and DI and was (3.47 ± 0.01) mm ($p < 0.05$). This may be due to severe periodontitis and a slow rate of bone regeneration in the implant area.

The lowest indicators of the level of bone resorption after 24 months remained in patients with GP of the I degree of development with normal BMD of group 1, who underwent staged PT with subsequent DI (0.57 ± 0.011) mm and one-staged PT and DI (0.62 ± 0.01) mm respectively, compared with patients with GP of the II degree of development of group 2, who also underwent staged PT with subsequent DI and one-staged PT and DI - (1.03 ± 0.008) mm, (1.97 ± 0.006) mm, respectively.

The dynamics of bone resorption around implants in patients of group 3 on GP III degree of development with normal BMD, which was performed in stages PT and DI during the entire observation period was statistically significantly different from previous values and was - (1.92 ± 0.01) mm after 6 months, (2.97 ± 0.02) mm after 12 months and (3.09 ± 0.2) mm after 24 months after implant placement ($p < 0.05$).

Discussion.

During the study of bone metabolism, it was found that in 40.19% of cases of first-degree GP, in 48.45% of cases of second-degree GP and in 61.11% of third-degree GP, surgery is performed against a background of reduced BMD. According to Mazur IP only 44.4% with the use of GP occurs on the background of normal BMD [19]. And Leonenko PV prove that only 20.2% of 193 comprehensively examined GP inquiries were detected on the background of normal BMD, and 80% of appeals were found to be other structural and functional disorders of bone tissue [20].

When analyzing the results of bone resorption in patients with reduced BMD 6 months after dental implants, the lowest level of bone resorption was observed in patients with GP I stage of development of group 1 - (0.49 ± 0.006) mm, who underwent staged PT with subsequent DI compared with patients of the same group, who underwent one-staged PT and DI - (0.54 ± 0.006) mm and with patients with GP II degree of development of group 2, who underwent staged PT with subsequent DI and one-staged PT and DI - (0.73 ± 0.006) mm, (0.92 ± 0.006) mm, but it was higher than in patients with normal BMD of these groups - (0.34 ± 0.008) mm, (0.42 ± 0.006) mm, (0.56) ± 0.008) mm, (0.77 ± 0.005) mm, respectively.

The highest level of resorption was observed in patients with GP III degree of development of group 3 with reduced BMD, who underwent one-staged PT and DI - (3.92 ± 0.06) mm. The difference in bone loss after 6 months in patients with GP III stage of development with reduced BMD group 3 compared with patients with GP I, II stage 1 and 2 groups was statistically significant ($p < 0,05$).

After 12 months of follow-up, the lowest level of bone resorption was found in patients with GP I degree of development with reduced BMD of group 1 - (0.52 ± 0.006) mm, who underwent staged PT with subsequent DI. The above level of bone resorption differs statistically from the values of patients of the same group, who underwent one-staged PT and DI - (0.63 ± 0.006) mm and from patients with GP II stage of development of group 2, who underwent staged PT with subsequent DI and one-staged PT and DI - (0.85 ± 0.006) mm, (1.28 ± 0.006) mm ($p < 0.05$). Bone resorption during the observation period after 12 months continued to progress in patients with GP stage III development of group 3 and was the highest in patients who underwent one-staged PT and DI and was (4.1 ± 0.04) mm ($p<0.05$). This is due to severe periodontitis and decreased BMD.

The lowest indicators of the level of bone resorption after 24 months remained in patients with GP I degree of development with reduced BMD group 1, who underwent staged PT with subsequent DI and one-staged PT and DI - (0.69 ± 0.006) mm, (0.74 ± 0.006) mm, respectively, compared with patients with GP II degree of severity of group 2, who also underwent staged PT with subsequent DI and one-staged PT and DI - (1.28 ± 0.006) mm, (2.41 ± 0.006) mm, respectively, but they were higher than bone resorption rates in patients with normal BMD - (0.57 ± 0.011) mm, (0.62 ± 0.01) mm, (1.03 ± 0.008) mm, (1.97 ± 0.006) mm.

The highest level of resorption was observed in patients with GP III degree of development of group 3 with reduced BMD, who underwent one-staged PT and DI - (4.27 ± 0.06) mm compared with patients with GP I, II degree of development 1 and 2 groups

- (0.74 ± 0.006) mm, (2.41 ± 0.006) mm ($p<0.05$). Povoroznyuk VV, Batig VM, Mukhamedzhanova LR also confirms the data that BMD disorders, especially in osteoporosis, adversely affect the condition of periodontal tissues, resulting in, in combination with other adverse factors, accelerates tooth loss [21,22]. And rapidly progressing atrophy of alveolar processes significantly complicates prosthetic treatment using DI [23]. Gunko MV suggests that in patients with prosthetic there is a more severe degree of damage to periodontal tissues, compared with patients with normal BMD, despite the same level of oral hygiene [24].

Evaluation of the results of the effectiveness of the proposed method of surgical treatment of patients with GP I, II, III degree of development with one-staged and staged DI and with targeted appointment of osteotropic therapy led to the conclusion that patients with GP I stage of development of group 1 with normal BMD, whom was performed staged and one-staged DI , are not at risk of osteoporosis in the alveolar bone, which caused the least number of complications (3.2%) of these patients and the preservation of high bone density in the implantation site for 2 years.

Thus, to increase the effectiveness of DI in patients with GP, it is necessary to take into account BMD and determine markers of bone remodeling for differentiated administration of osteotropic drugs and the choice of treatment that will predict bone resorption and correct the course of reparative osteogenesis to prevent implant loss [25-28].

Conclusion.

1. It was found that the highest level of resorption was observed in patients with generalized periodontitis of III degree of development with reduced bone mineral density, who underwent one-staged periodontal treatment and dental implantation - (4.27 ± 0.06) mm compared with patients with normal mineral bone density - (3.97 ± 0.04) mm, and in comparison with patients with generalized periodontitis III degree of development with reduced bone mineral density, who underwent staged periodontal treatment followed by dental implantation - (3.83 ± 0, 05) mm.

2. Evaluation of the effectiveness of the proposed method of surgical treatment of patients with generalized periodontitis with one-staged and staged dental implantation and targeted osteotropic therapy proves that patients with generalized periodontitis of the first degree of development with normal bone mineral density, who underwent staged and one-staged dental implantation are not at risk of osteoporosis in the alveolar bone, which caused the least number of complications (3.2%) of these patients, and in patients with low bone mineral density for the 2nd year of dispensary observations, the number of peri-implantitis and implant disintegrations was increased and the number of complications was 5.7% of cases.

3. Dental implantation in patients with generalized periodontitis of the first degree allows to achieve consistently good results regardless of the method of treatment. One-staged performance of surgery on periodontal tissues and dental implantation reduces the duration of treatment by 1.5-2 times without reducing its quality.

4. In patients with generalized periodontitis of II-III degrees, it is advisable to gradually perform surgical procedures followed by dental implantation to prevent postoperative complications and loss of implants.

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РЕЗЮМЕ

ИЗУЧЕНИЕ КОСТНОЙ РЕЗОРБЦИИ КАК ФАКТОРА РИСКА ПРИ ДЕНТАЛЬНОЙ ИМПЛАНТАЦИИ У БОЛЬНЫХ ГЕНЕРАЛИЗОВАННЫМ ПАРОДОНТИТОМ

Проц Г.Б[1], Рожко М.М[2], Палийчук И.В1., Нычипорчук Е.П[2], Проц И.И[3].

[1]Кафедра хирургической стоматологии Ивано-Франковского национального медицинского университета, Ивано-Франковск, Украина.

[2]Кафедра стоматологии, Институт последипломного образования, Ивано-Франковский национальный медицинский университет, Ивано-Франковск, Украина.

[3]Клиника НеоКар, Ивано-Франковск, Украина

Метод дентальной имплантации у больных генерализованным пародонтитом является одним из приоритетных направлений, требующих углубленного изучения. Цель исследования — повышение эффективности дентальной имплантации за счет разработки методов устранения резорбции костной ткани у больных генерализованным пародонтитом. Обследовано 240 больных генерализованным пародонтитом I, II, III степени развития с частичной адентией верхней и нижней челюстей, которым в последующем проведено комплексное лечение пародонта методами дентальной имплантации. Использовались рентгенологические, денситометрические и клинические методы исследования. Наименьшие показатели резорбции костной ткани у пациентов с 24-месячным развитием со сниженной минеральной плотностью кости, которым проводилось этапное пародонтологическое лечение с последующей дентальной имплантацией и одноэтапное пародонтологическое лечение и дентальная имплантация - (0,69 ± 0,006) мм, (0,74 ± 0,006) мм соответственно. Выводы. Наиболее высокий уровень резорбции отмечен у больных генерализованным пародонтитом III степени развития со сниженной минеральной плотностью костной ткани, которым проводилось одномоментное пародонтологическое лечение и дентальная имплантация - (4,27 ± 0,06) мм по сравнению с больными генерализованным пародонтитом I степени, II степень развития - (0,74 ± 0,006) мм, (2,41 ± 0,006) мм, ($p < 0,05$).

Ключевые слова: генерализованный пародонтит, дентальные имплантаты, структурно-функциональное состояние костной ткани, резорбция костной ткани.

Список сокращений:

DI - день имплантации
GP - генерализованный пародонтит
PT - лечение пародонта
BMD – минеральная плотность кости

SUMMARY

STUDY OF BONE RESORPTION AS A RISK FACTOR IN DENTAL IMPLANTATION IN PATIENTS WITH GENERALIZED PERIODONTITIS

Prots H[1], Rozhko M[2], Paliichuk I[2], Nychyporchuk H[2], Prots I[3].

[1]Department of Surgical Dentistry, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine.

[2]Department of Dentistry, Institute of Postgraduate Education, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine.

[3]Clinic NeoKar, Ivano-Frankivsk, Ukraine.

The method of dental implantation in patients with generalized periodontitis is one of the priority areas requiring in-depth study. The aim of the study was to increase the efficiency of dental implantation by developing methods for eliminating

bone resorption in patients with generalized periodontitis. There were examined 240 patients with generalized periodontitis of I, II, III degree of development with partial adentia of the upper and lower jaws, who later underwent comprehensive periodontal treatment using dental implantation methods. There were used radiological, densitometric and clinical research methods. The lowest rates of bone resorption in patients with 24 months development with reduced bone mineral density, which was carried out in stages periodontal treatment, followed by dental implantation and one-staged periodontal treatment and dental implantation - (0.69 ± 0.006) mm, (0.74 ± 0.006) mm, respectively. Conclusions: The highest level of resorption was observed in patients with generalized periodontitis of III degree of development with reduced bone mineral density, who underwent one-staged periodontal treatment and dental implantation - (4.27 ± 0.06) mm compared with patients with generalized periodontitis of I, II degree of development. - (0.74 ± 0.006) mm, (2.41 ± 0.006) mm, ($p < 0.05$).

Keywords: Generalized periodontitis, dental implants, structural-functional state of bone tissue, resorption of bone tissue.

List of abbreviations. DI: Day Implantation; GP: Generalized Periodontitis; PT: Periodontal Treatment; BMD: Bone Mineral Density.

რეზიუმი

ძვლის რეზორბციის, როგორც რისკის ფაქტორის შესწავლა სტომატოლოგიურ იმპლანტაციაში გენერალიზებული პაროდონტიტის მქონე პაციენტებში

Prots H[1], Rozhko M[2], Paliichuk I[2], Nychyporchuk H[2], Prots I[3].

[1]ქირურგიული სტომატოლოგიის განყოფილება, ივანო-ფრანკოვსკის ეროვნული სამედიცინო უნივერსიტეტი, ივანო-ფრანკივსკი, უკრაინა; [2]სტომატოლოგიის დეპარტამენტი, დიპლომისშემდგომი განათლების ინსტიტუტი, ივანო-ფრანკოვსკის ეროვნული სამედიცინო უნივერსიტეტი, ივანო-ფრანკივსკი, უკრაინა; თერაპიული სტომატოლოგიის; [3]კლინიკა ნეოკარი, ივანო-ფრანკოვსკი, უკრაინა

გენერალიზებული პაროდონტიტის მქონე პაციენტებში დენტალური იმპლანტაციის მეთოდი ერთ-ერთი პრიორიტეტული მიმართულებაა, რომელიც საჭიროებს სიღრმისეულ შესწავლას. კვლევის მიზანი იყო დენტალური იმპლანტაციის ეფექტურობის გაზრდა გენერალიზებული პაროდონტიტის მქონე პაციენტებში ძვლის რეზორბციის აღმოფხვრის მეთოდების შემუშავებით. გამოკვლეული იყო 240 პაციენტი I, II, III ხარისხის განვითარების გენერალიზებული პაროდონტიტით ზედა და ქვედა ყბის ნაწილობრივი ადენტიით, რომლებმაც მოგვიანებით გაიარეს ყოვლისმომცველი პაროდონტის მკურნალობა დენტალური იმპლანტაციის მეთოდებით. გამოყენებული იყო რენტგენოლოგიური, დენსიტომეტრიულიდაკლინიკურიკვლევისმეთოდები. ძვლის რეზორბციის ყველაზე დაბალი მაჩვენებლები 24 თვიანი განვითარების მქონე პაციენტებში შემცირებული ძვლის მინერალური სიმკვრივით, რომელიც ჩატარდა ეტაპობრივად პაროდონტალური მკურნალობა, რასაც მოჰყვა სტომატოლოგიური იმპლანტაცია და ერთსაფეხურიანი პაროდონტის მკურნალობა და დენტალური იმპლანტაცია - (0.69 ± 0.006) მმ, (0.74). ± 0,006) მმ, შესაბამისად. დასკვნა: რეზორბციის ყველაზე მაღალი დონე დაფიქსირდა პაციენტებში III ხარისხის განვითარების გენერალიზებული პაროდონტიტით, შემცირებული ძვლის მინერალური სიმკვრივით, რომლებმაც გაიარეს ერთეტაპიანი პაროდონტის მკურნალობა და დენტალური იმპლანტაცია - (4,27 ± 0,06) მმ I-ის გენერალიზებული პაროდონტიტის მქონე პაციენტებთან შედარებით. განვითარების II ხარისხი. - (0,74 ± 0,006) მმ, (2,41 ± 0,006) მმ, ($p < 0,05$).

საკვანძო სიტყვები: გენერალიზებული პაროდონტიტი, დენტალური იმპლანტები, ძვლოვანი ქსოვილის სტრუქტურულ-ფუნქციური მდგომარეობა, ძვლოვანი ქსოვილის რეზორბცია.

აბრევიატურების სია:

DI - დღის იმპლანტაცია

GP - გენერალიზებული პაროდონტიტი

PT - პაროდონტის მკურნალობა

BMD - ძვლის მინერალური სიმკვრივე