

# GEORGIAN MEDICAL NEWS

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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 ბაზებიდან.

### WEBSITE

[www.geomednews.com](http://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](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.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](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.

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## A CLINICAL CASE OF DIFFUSE TOXIC GOITER WITH ENDOCRINE OPHTHALMOPATHY AND MANIFESTATIONS IN THE DENTAL SYSTEM IN A 15-YEAR-OLD CHILD

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### Abstract.

**Introduction:** Diffuse toxic goiter (DTG) is an autoimmune disease caused by antibodies against thyroid-stimulating hormone (TSH) receptors. Combinations of DTG with other autoimmune diseases such as endocrine ophthalmopathy, pretibial myxedema and acropathy are often observed in clinical practice. Along with this pathology, the patient has hypodynamia and, as a result, the development of functional disorders of the musculoskeletal system.

**Aim:** To analyze the comprehensive clinical observation of the diagnosis and treatment of DTZ with EOP of a child aged 15 years.

**Materials and methods:** Analysis of medical history data, comprehensive examination, including fixation of the physiological and dental status, supervision of patient K., 15 years old, who was on inpatient treatment in the children's department of the State Medical Institution "OKB No. 1" in Tyumen.

**Conclusion:** This case report demonstrates symptoms of diffuse toxic goiter with ophthalmopathy that may manifest on only one side. It shows a decrease in functional parameters, manifestations in the dental system, due to a decrease in habitual motor activity, which corresponds to the clinical picture of manifestations of periodontal disease. In addition, it shows the possibility of relapse of the disease after clinical and laboratory remission during medication intake, what may be an indication for surgical treatment. Practitioners need to remember about this pathology and the need for its timely diagnosis, including specialists in related fields.

**Keywords.** Diffuse toxic goiter, endocrine ophthalmopathy, dental system.

### Introduction.

Diffuse toxic goiter (DTG) is an autoimmune disease caused by antibodies against thyroid-stimulating hormone (TSH) receptors. Combinations of DTG with other autoimmune diseases such as endocrine ophthalmopathy, pretibial myxedema and acropathy are often observed in clinical practice [1,2,3]. Along with this pathology, the patient has hypodynamia and, as a result, the development of functional disorders of the musculoskeletal system. Clinical signs in the dental system occur at the initial stages of the development of the disease and tend to progress with its course [3-5,1-13].

Endocrine ophthalmopathy (EOP) is a chronic autoimmune eye disease characterized by edema and lymphocytic infiltration of retrobulbar tissue and extraocular muscles with subsequent

fibrosis. In approximately 90% of cases EOP occurs in patients with diffuse toxic goiter, 5% – in patients with Hashimoto's thyroiditis, and among 5–10% of patients with EOP no thyroid disorders are detected [13]. However, among individuals with diffuse toxic goiter clinically significant ophthalmopathy occurs only in 25%, though subclinical eye damage with extraocular muscles enlargement may be detected radiographically in 70% of patients [9].

The most common clinical manifestations of EOP include eyelid retraction, exophthalmos, extraocular muscles dysfunction and eye pain [8]. Nonetheless, the main danger of EOP is the risk of vision loss due to compressive optic neuropathy [7].

Annually more than 1.5 million adults and about 650 thousand children with various diseases of the thyroid gland (TG) visit medical institutions. In 65% of cases in adults and 95% in children the cause of thyroid disorders is insufficient dietary intake of iodine [1]. There are two peaks in the incidence of EOP: at 40-44 years and 60-64 years in women, at 45-49 years and 65-69 years in men [10]. However, in recent decades EOP has been noted to occur even among young individuals. Moreover, in the last few years number of reports showing compressive optic neuropathy and exposure keratopathy due to EOP in the pediatric population has also increased, despite the fact that previously such cases were concerned extremely rare [12].

Indications for surgical treatment of diffuse toxic goiter – thyroidectomy, include compression syndrome caused by an enlarged thyroid gland, clinically confirmed malignancy of the thyroid nodes, moderate or severe orbitopathy in patients intolerant to antithyroid drugs [11].

**Aim.** To analyze the comprehensive clinical observation of the diagnosis and treatment of DTZ with EOP of a child aged 15 years.

### Materials and Methods.

Analysis of medical history data, comprehensive examination, including fixation of the physiological and dental status, supervision of patient K., 15 years old, who was on inpatient treatment in the children's department of the State Medical Institution "OKB No. 1" in Tyumen.

### Results.

**Clinical observation:** A 15-year-old boy K. was admitted to the hospital emergency department in September 2023 with complaints of weight loss of 26 kg since December 2022. In February 2023 he visited polyclinic where he complained of weakness and fatigue. The established diagnosis was unspecified



dystonia, recommendations: potassium iodide 200 mg, 1 tablet in the morning for 3 months. Since April 2023 – complaints of limb tremor, sweating, emotional lability and fatigue. These were followed by asymmetry of eyes – widening of the right palpebral fissure. In this regard, in August 2023 we consulted an ophthalmologist, the diagnosis was: mild bilateral myopia, EOP in doubt, consultation with endocrinologist was recommended. In September 2023 the boy was examined by endocrinologist, the established diagnosis was: “Graves’ disease, manifestation, goiter grade 2, phase of thyrotoxicosis, moderate severity”, according to the diagnosis the boy was hospitalized.

From the anamnesis vitae it is known that the child was born from the first pregnancy accompanied by toxicosis in the first trimester. Delivery was first, full-term, independent. Birth weight – 3 kg 750 g. Received breast milk until two years. Previous diseases included only rare acute respiratory viral infections. Family history: multinodular goiter in a maternal aunt. Grandmother has diabetes mellitus.

**Status praesens:** Consciousness: awake. Weight: 65 kg. Height: 169 cm. BMI 22.76 kg/m<sup>2</sup>. General condition: moderate severity, small hand tremors, eyelids twitching. Thyroid gland is diffusely enlarged, grade 2 (according to WHO classification), has dense elastic consistency, painless, not fused with surrounding tissues. Heart rate 100/min. Blood pressure 125/70 mmHg; the type of habitual motor activity 1 is low (locomotion index 7,323).

**Status localis (during admission):** Eye symptoms: Graefe’s, Kocher’s, Dalrymple’s, Jellinek’s signs are positive on the right. Pronounced asymmetry of palpebral fissures due to ophthalmopathy on the right, palpebral fissures are greatly dilated, a frightened, wary look. Sexual maturity rating: Tanner 4. Otherwise, there are no special features.

**Clinical investigation:** Complete blood count, urinalysis and biochemical blood test – within normal range. High levels of free T4, antibodies to TSH receptor, antibodies to thyroid peroxidase and antibodies to thyroglobulin. Reduction of TSH level. ECG: Sinus tachycardia 107 per minute. Incomplete right bundle branch block; Thyroid ultrasound: Diffuse changes in thyroid gland. Echocardiography: Mild aortic regurgitation. Mitral regurgitation grade 1. Heart chambers are not dilated. Ejection fraction 64%. MRI of the orbits: Slight exophthalmos on both sides without signs of extraocular muscles enlargement.

Specialist examination. Ophthalmologist – ophthalmometry: OD 24 mm, OS 21 mm, fundus without pathology.

Prescriptions during inpatient stay included thiamazole 15 mg in the morning and 10 mg in the evening and beta-blockers (atenolol 50 mg twice daily). The patient was discharged with recommendations to readmit in case of worsening.

Dental examination. Dental records according to WHO 2013: CPU 12, including 0 removed, physiological bite: straight, periodontal condition: NEEDLE 2.5, gingival hypertrophy, swelling, bleeding during probing, false dentoalveolar pockets, abundant amount of supra-gingival and subgingival dental deposits; musculotonic violation of the chewing muscles on the right, asynchronous movement of the articular heads when lowering the lower jaw, the presence of a crunch when opening the mouth on the right, deviation of the lower jaw

to the left. Conclusion: Hyperplastic gingivitis; syndrome of pain dysfunction of the maxillary joint. Recommendations for oral care are given. It is aimed at consulting a gynecologist to eliminate dysfunctional disorders and prevent pathology of the maxillary joint.

10 days after, the patient was examined by an endocrinologist on an outpatient basis. CBC within normal range. TSH < 0.05 mcME/ml – age-appropriate normal value, free T4 20.8 pmol/L – norm. Status localis: exophthalmos (became less pronounced over time), no data for ophthalmometry, consultation with ophthalmologist was recommended.

Three weeks after discharge from the hospital (October 2023) the boy with his parents sought medical help in emergency department of the children’s hospital and was readmitted with complaints of enlargement of the right eye, incomplete closure of palpebral fissures, a feeling of “sand in eyes,” limb tremor and sweating.

**Clinical investigation:** TSH – suppressed, T4 within normal range. Ophthalmometry: OD 25 mm, OS 18 mm. During therapy with thyreostats and beta-blockers, thyrotoxicosis was compensated. In accordance with clinical guidelines for EOP, pulse therapy with methylprednisolone was performed (1000 mg on the first day, for the next 4 days – 500 mg).

A consultation was held. Considering presence of a persistent euthyroid state (during taking medications), short-term effect of thyreostats and progressive EOP the patient was advised to undergo radical treatment – an elective thyroidectomy. The patient’s parents rejected. The patient was discharged with improvement under supervision of a pediatrician and endocrinologist.

A month later, the boy was examined by an ophthalmologist on an outpatient basis – ophthalmometry: OD 23 mm, OS 22 mm. Then, in December of the same year, an ultrasound of the orbits revealed dilation of the retrobulbar part of both eyes.

## Conclusion.

This case report demonstrates symptoms of diffuse toxic goiter with ophthalmopathy that may manifest on only one side. It shows a decrease in functional parameters, manifestations in the dental system, due to a decrease in habitual motor activity, which corresponds to the clinical picture of manifestations of periodontal disease. In addition, it shows the possibility of relapse of the disease after clinical and laboratory remission during medication intake, what may be an indication for surgical treatment. Practitioners need to remember about this pathology and the need for its timely diagnosis, including specialists in related fields.

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