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CLINICAL EVALUATION OF THE TREATMENT OUTCOMES OF GENERALISED PERIODONTITIS IN PATIENTS WITH UROLITHIASIS

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КЛІНІЧНА ОЦІНКА РЕЗУЛЬТАТІВ ЛІКУВАННЯ ГЕНЕРАЛІЗОВАНОГО ПАРОДОНТИТУ В ХВОРИХ СЕЧОКАМ'ЯНОЮ ХВОРОБОЮ

INFORMATION

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ABSTRACT

The complexity of treating generalised periodontitis arises not only from an incomplete understanding of its developmental mechanisms but also from its strong association with various systemic diseases. On the one hand, such conditions create a favourable environment for the progression of dental pathology. On the other hand, generalised periodontitis itself can often trigger or exacerbate somatic diseases.

This study aimed to confirm the clinical efficacy of a proposed therapeutic and prophylactic agent, applied locally as part of the complex therapy for generalised periodontitis in patients with urolithiasis.

Materials and Methods. A comprehensive treatment protocol was conducted for 148 patients with urolithiasis who presented with generalised periodontitis of first- and second-degree severity. 75 patients (the main group) received the developed product in the form of a topical film, while 73 patients (the control group) were treated according to standard periodontal management and treatment plans. The product in the form of a dental film provides anti-inflammatory, antimicrobial, anti-edematous, wound healing, and localized anaesthetic effects and is intended for topical use in the oral cavity. Its composition includes metronidazole, emulsifier OS-20, saccharin, sodium carboxymethyl cellulose and purified water. According to the utility model, it additionally contains dexpanthenol 20%, decamethoxine and trimethacaine. The effectiveness of treating generalised periodontitis in patients with urolithiasis was determined by both subjective and objective criteria. Objectively – using the PMA, ARI and Loe-Silness indices, which were determined before treatment, immediately after treatment and after 3, 6, 9 and 12–13 months.

The Results and Discussion. The clinical evaluation indicates a positive therapeutic effect of the proposed drug composition in the form of a dental film when used in the complex treatment of generalised periodontitis in patients with urolithiasis. Radiologically, after treatment, stabilisation of the pathological process in patients with first-degree generalised periodontitis and concurrent urolithiasis was noted in 93.55% of patients in the main group, and 82.25% in patients in the control group. For second-degree periodontitis, these values were 75.76% and 61.87%, respectively. The developed method of complex treatment for patients with generalised periodontitis using an anti-inflammatory film achieved sustained stabilisation of the dystrophic-inflammatory process in periodontal tissues after 6 months: in 94% of patients with first-degree periodontitis and 76% of those with second-degree periodontitis in the main group. In the control group, these figures were 53% and 40%, respectively. Twelve-month remission in the main group was observed in 62.76% of patients with first-degree periodontitis and in 45.16% of those with second-degree periodontitis, whereas in the control group, only 5.3% of first-degree periodontitis cases achieved remission.

Conclusions. The obtained results of the periodontal tissue condition showed the high efficiency of the local use of dental film in the complex treatment of generalised periodontitis in patients with urolithiasis, which provides a significant improvement in clinical indicators of treatment effectiveness. The developed method for treating generalised periodontitis helps prevent exacerbations of the pathological process in the long term after treatment and helps prevent complications. The method is simple, affordable, and economical and can be recommended for implementation in medical institutions of any level where patients with generalised periodontitis are treated.

ІНФОРМАЦІЯ

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Ключові слова: генералізований пародонтит, сечокам'яна хвороба, комплексне лікування, стоматологічна плівка, індексна оцінка пародонтального статусу.

АНОТАЦІЯ

Складність лікування генералізованого пародонтиту обумовлена не тільки відсутністю чітких уявлень про механізми розвитку цього захворювання, а й досить високим ступенем асоціації захворювань пародонта із рядом системних захворювань, які, з одного боку, є сприятливим підґрунтям для розвитку стоматологічної патології, а з іншого – сам генералізований пародонтит нерідко може бути причиною маніфестації розвитку соматичних хворіб.

Мета дослідження – підтвердити клінічну ефективність місцевого використання запропонованого лікувально-профілактичного засобу в комплексній терапії генералізованого пародонтиту в хворих сечокам'яною хворобою.

Матеріали та методи. Нами проведено комплексне лікування генералізованого пародонтиту I та II ступенів тяжкості в 148 пацієнтів, хворих сечокам'яною хворобою (75 пацієнтів становили основну групу із застосуванням розробленого нами засобу у вигляді плівки для місцевого застосування та 73 – контрольну групу) за протоколом пародонтологічного ведення та планом лікування. Засіб у формі стоматологічної плівки забезпечує протизапальну, антимікробну, протинабрякову, ранозагоювальну, місцево знеболювальну дію та призначений для місцевого застосування в порожнині рота. Засіб містить метронідазол, емульгатор ОС-20, сахарин, натрійкарбоксиметилцелюлозу та воду очищену, згідно з корисною моделлю, додатково містить декспантенол 20 %, декаметоксин і тримекаїн. Ефективність лікування генералізованого пародонтиту в хворих сечокам'яною хворобою визначали за суб'єктивними й об'єктивними критеріями. Об'єктивно – за допомогою індексів РМА, API та LOE-Silness, які визначали до лікування, безпосередньо після завершення лікування та через 3, 6, 9 та 12–13 місяців.

Результати досліджень та їх обговорення. Клінічна оцінка свідчить про позитивний терапевтичний ефект запропонованої лікарської композиції у вигляді стоматологічної плівки в разі застосування в комплексному лікуванні генералізованого пародонтиту у пацієнтів із сечокам'яною хворобою. Рентгенологічно після проведеного лікування стабілізація патологічного процесу в хворих генералізованим пародонтитом I ступеня на фоні сечокам'яної хвороби відмічена в 93,55 % хворих основної групи і 82,25 % у пацієнтів контрольної групи. За пародонтиту II ступеня тяжкості ці показники були 75,76 і 61,87 % відповідно. Опрацьована методика комплексного лікування хворих генералізованим пародонтитом із використанням протизапальної плівки дала змогу досягти стійкої стабілізації дистрофічно-запального процесу в тканинах пародонта через 6 місяців: у 94 % I ступеня і 76 % II ступеня тяжкості генералізованого пародонтиту хворих основної групи, тоді як у контрольній групі цей показник становив 53 і 40 % відповідно. Ремісія тривалістю 12 місяців у пацієнтів основної групи з генералізованим пародонтитом I ступеня відмічена у 62,76 % хворих, а II ступеня важкості – у 45,16 % обстежених. У контрольній групі хворих тільки у 5,3 % хворих із генералізованим пародонтитом I ступеня вдалося досягти ремісії перебігу.

Висновки. Отримані результати стану тканини пародонта засвідчили високу ефективність місцевого використання стоматологічної плівки в комплексному лікуванні генералізованого пародонтиту пацієнтів із сечокам'яною хворобою, що забезпечує достовірне покращення клінічних показників ефективності лікування. Розроблений метод лікування генералізованого пародонтиту дає змогу уникнути загострення патологічного процесу у віддалені терміни після проведеного лікування і сприяє профілактиці ускладнень. Метод простий, доступний, економічний і може бути рекомендований до впровадження в лікувальних установах будь-якого рівня, де лікуються хворі з генералізованим пародонтитом.

Introduction. Generalized periodontitis (GP) is one of the most severe periodontal diseases in terms of its course and consequences, which negatively affects the psycho-emotional state of patients. An incomplete dentition and aesthetic dissatisfaction with the condition of the periodontal soft tissues lead to a deterioration in the patient's quality of life. Early tooth loss and frequent exacerbations of GP significantly affect the adaptive mechanisms of the entire dentoalveolar system. Ineffective fragmentary chewing of food and the constant influence of microbial substances from inflammatory periodontal foci create a basis for the development of chronic diseases of internal organs and systems, forming a background for pronounced sensitization of the body and triggering the mechanisms of autoimmune pathology [1; 2; 3; 4]. Therefore, an important direction in modern dentistry is the study of the interrelationships between periodontal tissue lesions and diseases of internal organs and systems, as well as the development of pathogenetically oriented therapeutic and preventive measures [5; 6; 7].

The complexity of GP treatment is determined not only by the lack of a clear understanding of the disease's development mechanisms but also by

the rather high degree of comorbidity with several systemic conditions. These conditions provide a favorable background for the development of GP, but GP itself may often be the cause of the manifestation of somatic diseases [8; 9; 10].

This study aimed to confirm the clinical efficacy of local use of a proposed therapeutic and preventive agent as part of the comprehensive treatment of generalized periodontitis in patients with urolithiasis.

Materials and Methods. We conducted complex treatment of GP of degrees I and II in 148 patients with urolithiasis (75 patients in the main group, in whom our newly developed locally applied film-based agent was used, and 73 in the control group), according to a periodontological protocol and treatment plan. To objectify the condition of the patient's periodontal tissues, clinical data and index assessments were used. In the control group, "Pantestin" was used, as it belongs to the same pharmacotherapeutic group as our developed agent.

The severity of symptomatic generalized catarrhal gingivitis and the clinical features of its course in both groups were studied using the PMA, API, and LOE-Silness indices.

Our developed agent, in the form of a dental film, provides anti-inflammatory, antimicrobial, anti-edema, wound-healing, and local anaesthetic effects. It is intended for local use in the oral cavity (Patent of Ukraine for Utility Model No. 139513) [11]. The agent contains metronidazole, OS-20 emulsifier, saccharin, sodium carboxymethylcellulose, and purified water, as well as an additional 20% dexpantenol, decamethoxin, and trimecaine. Metronidazole is an effective antiprotozoal and broad-spectrum antibacterial agent. It has high activity against *Trichomonas vaginalis*, *Giardia intestinalis*, *Entamoeba histolytica*, *Lamblia intestinalis*, as well as against obligate anaerobes (both spore-forming and non-spore-forming) – *Bacterioides* spp. (*B. fragilis*, *B. ovatus*, *B. distasonis*, *B. theta*, *B. fragilis*, *B. vulgare*), *Fusobacterium* spp., *Clostridium* spp., *Peptostreptococcus* spp., *Peptococcus* spp., *Eubacterium* spp. The antiseptic decamethoxin accelerates healing and epithelialization of micro-injuries, prevents microbial contamination of the drug, and exhibits pronounced bactericidal activity against a wide range of bacteria, fungi, viruses, and protozoa. Trimecaine ensures rapid and prolonged local anaesthetic activity when the film is applied to the oral mucosa.

The film was used as follows: after removing dental deposits, smoothing sharp tooth edges and overhanging filling margins, and correcting poor-quality prosthetic constructions, the oral cavity was treated with antiseptic solutions, and a film of the required size was placed on the affected gingival mucosal surface and gently pressed. The number of film applications and the duration of treatment were determined individually for each patient.

Results and Discussion. The effectiveness of GP treatment in patients with urolithiasis was

determined by subjective and objective criteria. Objectively, we used the PMA, API, and LOE-Silness indices, which were measured before treatment, immediately after treatment, and at 3, 6, 9, and 12–13 months post-treatment.

The index-based assessment of the periodontal status before treatment in patients with GP degree I and urolithiasis is shown in Table 1.

The index-based assessment of the periodontal status before treatment in patients with GP degree II and urolithiasis is presented in Table 2.

No differences in the index-based assessment of periodontal status were found between the main and control groups ($p > 0.05$).

The number of treatment sessions largely depended on the form and severity of symptomatic gingivitis. In the majority of patients, chronic generalized catarrhal gingivitis in the exacerbation stage was observed. After local drug therapy, patients in the main group (where our film-based agent was used) noted positive outcomes based on subjective sensations as early as days 3–4 of treatment: there was a marked reduction in aching gum pain, disappearance of unpleasant mouth odor and burning sensations, and a feeling of freshness in the oral cavity.

Objective examination revealed a gradual disappearance of symptomatic gingivitis signs, cessation of exudate from periodontal pockets, consolidation of the gingival mucosa, and pale pink coloring of the gingival papilla, which did not bleed on palpation. A favorable influence on the course of the inflammatory process in this group of patients was provided by temporary splinting, which reduced the inflammatory process in the periodontium more quickly. After completion of treatment (8–10 days), the objective

Table 1

Periodontal status in GP degree I patients with urolithiasis before treatment

GP Patient Groups		Number of Patients	Periodontal Status Indices		
			PMA M ± m	API M ± m	GI bleeding M ± m
Main (urolithiasis) 1	1	31	0.343 ± 0.022	0.483 ± 0.028	1.36 ± 0.087
Control (urolithiasis) 2	2	32	0.348 ± 0.022	0.528 ± 0.0295	1.38 ± 0.088

Table 2

Periodontal status in GP degree II patients with urolithiasis before treatment

GP Patient Groups		Number of Patients	Periodontal Status Indices		
			PMA M ± m	API M ± m	GI bleeding M ± m
Main	1	44	0.470 ± 0.029	0.591 ± 0.037	1.85 ± 0.109
Control	2	41	0.484 ± 0.031	0.513 ± 0.025	1.92 ± 0.12

examination showed normalization of the color, consistency, and configuration of the gingival margin and elimination of its tension and pastiness. In the control group, stabilization of inflammatory changes in the periodontium was also achieved, but this process took longer.

The efficacy of GP treatment was evaluated in the long term – at 3, 6, 9, and 12–13 months – based on clinical and radiological, index, and statistical research methods.

Radiographically, stabilization of the pathological process in patients with GP degree I and urolithiasis was observed in 93.55% of patients in the main group and 82.25% in the control group. In GP degree II, these values were 75.76% and 61.87%, respectively.

During the epidemiological examination of patients with GP, we noted that “mild” bleeding was diagnosed when the PMA and GI indices corresponded to initial manifestations of symptomatic gingivitis of moderate severity. Specifically, those values were PMA = 0.26–0.30 points (26–30%) or

GI = 1.18–1.30 points, with a mean API (hygiene index) of 0.40–0.50 points (40–50%), which reflected a “satisfactory” level of oral hygiene. These index value ranges were chosen as reference thresholds to determine the need for relapse-preventive treatment in patients with GP of degrees I and II.

Along with the progression of inflammation, a deterioration in oral hygiene status was observed: in the main group, the hygiene level was characterized as “optimal,” whereas in the control group, it was classified as “satisfactory.”

Patients with clinically good periodontal tissue condition, radiological stabilization in the alveolar bone, and PMA index values up to 26%, API up to 40%, and GI up to 1.1 did not require additional treatment. Such patients were monitored for oral hygiene status, received individual hygiene aid corrections, and were given advice on strengthening immunity and improving general health.

Patients with complaints of periodic gum bleeding and itching, the presence of limited

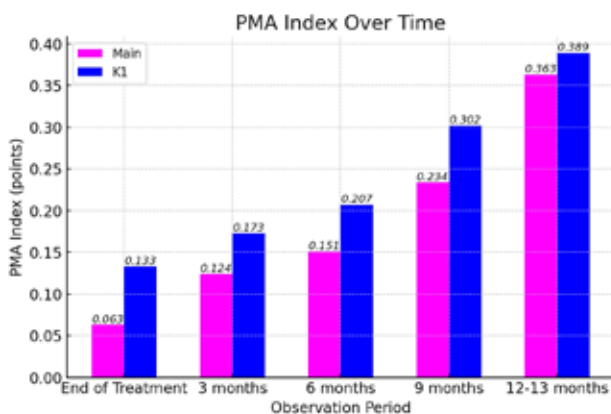


Fig. 1. Dynamics of changes in the PMA index in patients with GP (degree I) and urolithiasis at various observation stages

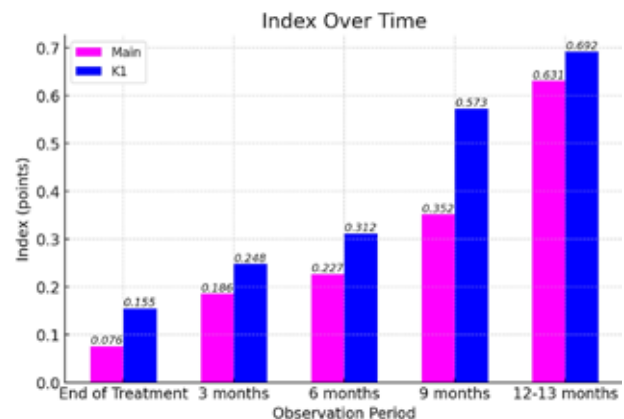


Fig. 2. Dynamics of changes in the API index in patients with GP (degree I) and urolithiasis at various observation stages

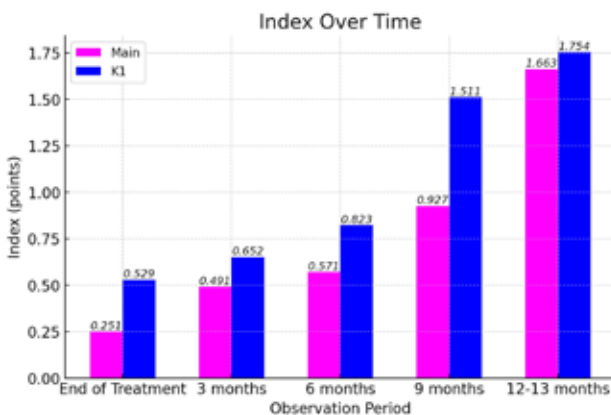


Fig. 3. Dynamics of changes in the Loe-Silness index in patients with GP (degree I) and urolithiasis at various observation stages

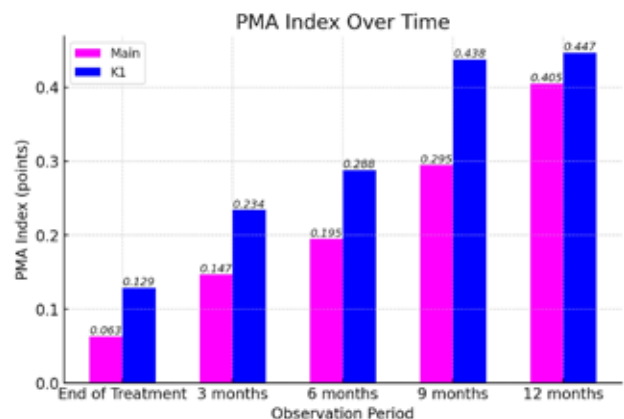


Fig. 4. Dynamics of changes in the PMA index in patients with GP (degree II) and urolithiasis at various observation stages

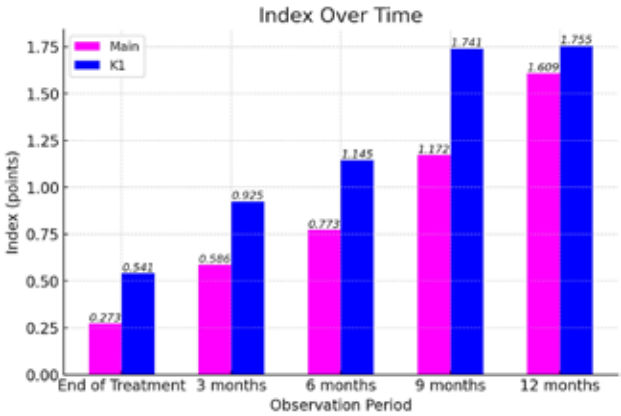


Fig. 6. Dynamics of changes in the API index in patients with GP (degree II) and urolithiasis at various observation stages

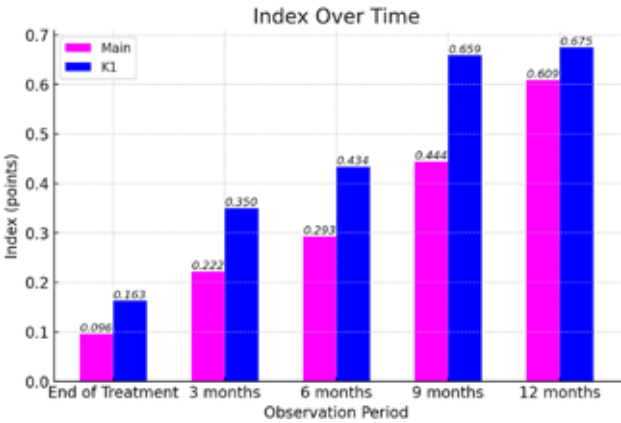


Fig. 5. Dynamics of changes in the Loe-Silness index in patients with GP (degree II) and urolithiasis at various observation stages

marginal gingivitis, stabilized dystrophic-inflammatory processes in the alveolar bone, and PMA index values between 26% and 30%, API between 40% and 50%, and GI between 1.1 and 1.3 were prescribed a preventive treatment course. This course included:

Checking and correcting individual oral hygiene practices.

Professional oral hygiene procedures.

Application of a medicinal film for 2–3 sessions.

Patients with pronounced clinical signs of an exacerbation of symptomatic catarrhal gingivitis or GP, as well as those with PMA above 30%, API above 50%, and GI above 1.3 points, were prescribed comprehensive GP treatment in full, along with

mandatory consultation by a urologist who oversaw the treatment of urolithiasis.

The results of evaluating the need for one or another type of treatment are presented in Table 3.

Thus, our proposed method of treating GP in patients with urolithiasis, using an anti-inflammatory film, allowed for steady stabilization of the dystrophic-inflammatory process in the periodontal tissues by the 6-month mark: 94% for GP degree I and 76% for GP degree II in the main group, whereas in the control group, these figures were 53% and 40%, respectively.

In the control group of patients with GP degrees I and II, 100% required comprehensive therapy. Among the main group, 62.76%

Table 3
Treatment needs for GP (degrees I and II) in patients with urolithiasis at 6 months

Diagnosis	Group	No treatment needed, %	Treatment needed %	
			Preventive	Comprehensive
Generalized periodontitis I	Main	93.55	6.45	0.00
	Control	52.94	41.18	5.88
Generalized periodontitis II	Main	75.76	24.24	0.00
	Control	40.00	31.43	28.57

Table 4
Treatment needs for GP (degrees I and II) in patients with urolithiasis at 12 months

Diagnosis	Group	No treatment needed, %	Treatment needed %	
			Preventive	Comprehensive
Generalized periodontitis I	Main	13.80	48.96	37.24
	Control	0.00	5.30	94.70
Generalized periodontitis II	Main	9.70	35.46	54.84
	Control	0.00	0.00	100

of patients with GP degree I and 45.16% with GP degree II showed remission lasting 12 months, whereas in the control group with urolithiasis, only 5.3% of patients with GP degree I achieved an unstable remission.

A radiological examination was carried out one year after treatment in both the main and control groups. Twelve months post-treatment, orthopantomograms of 87.23% of individuals in the main group with GP degree II showed stabilization of the inflammatory process in the alveolar bone: the destruction of interalveolar septa remained at the same level, and there was no increase in osteoporotic changes. In 12.77% of patients, the radiological picture of the periodontium had improved, as evidenced by reduced bone transparency, densification of bone structure with the disappearance of areas of lacunar resorption, and more distinct cortical plate shadows of the alveolar bone.

In the control group, the radiological picture remained stable in 83.33% of patients with GP degree II. In 27.08% of the examined individuals, their periodontal condition was rated unsatisfactory, including 10.42% whose radiological findings had worsened. Hence, our proposed method for treating GP in patients with urolithiasis, involving a newly developed film, yielded stable clinical results.

Conclusions. The obtained results on the condition of periodontal tissues confirm the high efficacy of local application of the dental film in the comprehensive treatment of generalized periodontitis in patients with urolithiasis. This approach reliably improves clinical measures of treatment effectiveness, as supported by positive dynamics of index values over both short and long observation periods. We observed shorter treatment times and fewer visits, along with stable remission of the inflammatory process in the periodontium. The developed scheme of comprehensive therapeutic and preventive measures provided a sustained clinical effect for GP degrees I and II in long-term follow-up.

The proposed GP treatment method helps avoid exacerbations of the pathological process and prevents complications. It is straightforward, accessible, cost-effective, and can be recommended for implementation in healthcare facilities of any level that treat patients with generalized periodontitis and urolithiasis.

Prospects for Further Research. The need to develop optimal comprehensive treatment regimens for periodontal diseases, using effective agents and taking into account clinical manifestations and the influence of pathogenetic factors of concomitant systemic diseases, remains an urgent task in modern therapeutic dentistry.

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