

O.V. Savchuk, N.V. Hasiuk¹, O.V. Klytynska², G.A. Yeroshenko³, M.S. Zaliznyak¹
 Interregional Academy of Personnel Management, Kiev, Ukraine, ¹Ternopil State Medical
 University, Ternopil, Ukraine, ²Uzhhorod National University, Uzhgorod, Ukraine
³Ukrainian academy of medical dental, Poltava, Ukraine

CLINICAL AND MORPHOLOGICAL ASPECTS OF COMPLEX TREATMENT OF GENERALIZED PERIODONTITIS

e-mail: gasyuk.natasha@gmail.com

The article presents scientific data on the substantiation of clinical effectiveness of the effectiveness of the use of the drug “Jen-metrohelur” in the complex treatment of generalized periodontitis. Thus, according to our clinical and morphological studies, the use of “Jen-metrohelur” in the treatment of generalized periodontitis is clinically effective. The justification for this provision is the results of complex clinical and morphological observations, positive dynamics of changes in PMA index (49.32 ± 1.98) and periodontal Russell index (3.89 ± 0.54) and changes in the functional status of segmental leukocytes in the dynamics of treatment. So, according to the results of our clinical and morphological studies, the use of the medication “Jen-metrohelur” in the treatment of generalized periodontitis is clinically effective. This provision suggests that in the generalized periodontitis, cells of the inflammatory process together with disorganized cells of the epithelium, connective tissue of the gums and periodontium and bacteria form specific kinds of infiltrates in the periodontal tissues, the nature of these infiltrate initiates the incidence of relapses in the generalized periodontitis in patients.

Keywords: generalized periodontitis, gums, periodontal pockets, cells.

The article was made within the framework of the research work of the «Development of new individualized approaches to the diagnosis, treatment and prevention of dental diseases in patients with primary and secondary lesions of oral tissues based on the study of their pathogenetic mechanisms», №0117U003024.

Currently, periodontal diseases is an important issue of contemporary dentistry, since it is accompanied by pronounced morphofunctional disorders of the dentoalveolar system and is characterized by polyetiology and cascade of metabolic disorders [2].

The prevalence of generalized periodontitis in various countries is quite high [1].

Various systematic and clinical-morphological forms of generalized periodontitis are distinguished, depending on the etiology, the nature of the clinical course and immune response [8, 10]. The polymorphic clinical manifestations of this nosology are associated with different composition of the subgingival microflora. Factors, affecting antimicrobial response and updated metabolic status of the body are also crucial [4, 5, 7].

The problem of early diagnosis of generalized periodontitis, the development of effective measures for its prevention and treatment, aimed at achieving long-lasting positive outcomes, is one of the leading places in the priority areas of the development of state-of-the-art dentistry [11].

The issue of expanding indications for medical prophylaxis of periodontal tissue lesions and its complications in the risk groups is relevant to date.

Recent publications highlight the need to develop a special complex of diagnostic and therapeutic periodontal interventions, which includes professional oral hygiene with grinding-in and polishing of the dental cervixes and roots, surgical interventions in the periodontal tissues with the use of tissue-compatible osteoplastic agents for alveolar bone regeneration, orthodontic and prosthetic treatment on indications [9].

This provision initiates the search for a comprehensive approach in the treatment of generalized periodontitis by expanding and applying the spectrum of medications of local action.

The purpose of the study was at substantiation the clinical effectiveness of the use of “Jen-metrohelur” (JenDental-Ukraine LLC) medication in the complex treatment of generalized periodontitis.

Methods and Material. During the first visit, dental status was studied using the conventional criteria; the resulting data were subsequently recorded in the 0-43/o outpatient card of a dental patient with mandatory indication of the oral hygien index, calculated according to J.C. Green, J.R. Wermillion (1964), and papillary-marginal-alveolar (PMA) index, C. Parma modification (1960).

ENT-diseases, gastrointestinal diseases, biliary diseases, cardio-vascular diseases, diabetes mellitus and other endocrine lesions, purulent-septic processes, tuberculosis, smoking, excessive use of alcohol and spicy food, use of chewing gum were excluded in the patients at the time of the study, taking into account their past medical histories.

The material was collected from periodontal pockets of patients with exacerbated generalized periodontitis during their first visit and in the dynamics of treatment with “Jen-metrohelur” medication, using a sickle-shaped burnisher. Subsequently, the collected material was applied to a sterile slide. Drying of the smears was carried out by the method of dry fixation at room temperature, open air access, followed by Romanowsky-Giemsa staining and morphological quantitative and qualitative analysis of cellular composition.

“Jen-metrohelur” (JenDental-Ukraine LLC) medication consists of four active ingredients, namely chlorhexidine diacetate, metronidazole benzoate, hydrocortisone acetate and methyluracil, which are present in the most active form in the biopolymer matrix, which provides a prolonged release of ingredients into the surrounding soft tissues.

The findings of clinical and complex morphological studies were analyzed using a number of methods of biological statistics. The statistical processing of the resulting data was carried out using the licensed StatSoft *Statistica* software.

Absolute quantitative indices obtained during the examination of patients were processed by mathematical statistics with the calculation of the mean sample values (M) and errors of mean values (m) in the groups of subjects [3].

Parametric methods were applied to the indices with normal distribution. Compliance with the normal distribution was verified by the Shapiro-Wilk test [3]. In the cases where the distribution was not statistically different from normal, the statistical probability of changes in the indices in the independent samples was determined using the Student’s t-test. Differences were considered significant in conventional error in biomedical studies, $p < 0.05$ [3].

Results and Discussion: Patients with exacerbated generalized periodontitis complained of pain, bleeding and discomfort in the gums. The dental examination of patients revealed bright hyperemia and edema of the gingival papillae and gingival margin, and in some cases of the alveolar part of the gums. The depth of periodontal pockets ranged from (5.55 ± 0.13) , mainly in the area of the interdental fissure; the teeth were stable or with Class I, rare Class II teeth mobility. They were diagnosed with symptomatic gingivitis of the catarrhal clinico-morphological form and a recession of the gums with baring of dental cervixes and roots. The PMA index was (61.28 ± 2.33) , the Russel periodontal index was (4.23 ± 0.12) .

Periodontal pockets were filled with granulations and palpable serous-purulent exudate. Minor supra- and sub-gingival hard calculus deposits and significant dental plaque were found in periodontal pockets and on the dental crowns surface, respectively.

During the first visit of a patient with exacerbated Stage I- II generalized periodontitis, after performing professional oral hygiene using a ultrasonic scaler (or by mechanical method, if necessary), followed by polishing the roots, antiseptic sanitization with 0.05% chlorhexidine solution and drying of periodontal pockets with paper pins, the gel was administered into each periodontal pocket using a plastic nozzle, included in the kit. Initially, the gel was first administered into the deepest compartment of the periodontal pocket, subsequently filling the pocket to the gingival edge (Fig. 1, Fig. 2).

The patients were recommended to avoid drinking and taking food within 30 minutes after administration of the gel. Similar procedures were continuously performed for 14 days, with a daily interval.



Fig. 1 Administration of the gel into the deepest compartment of periodontal pocket using the plastic nozzle.

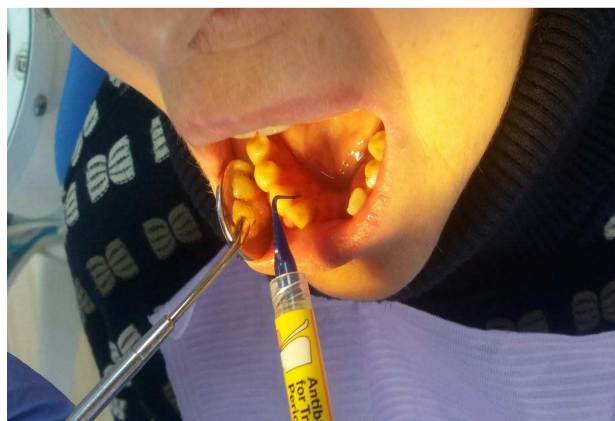


Fig. 2 Administration of the gel using the plastic nozzle, filling the periodontal pocket up to the gingival edge.

On day 14, clinical signs of positive dynamics were observed that were manifested by the absence of gingival pain, bleeding and unpleasant sensations. General clinical examination revealed slightly

cyanotic gums, no gingival edema except for palpable swollen gingival papillae. No exudate was detected in periodontal pockets on both jaws. The depth of periodontal pockets was (4.01 ± 0.11) . The values of the PMA index (37.32 ± 1.68) and the periodontal Russel index (3.25 ± 0.14) were significantly changed compared to the previous values of the above indices recorded during the first visit, $p < 0.05$.

The study of cellular composition of periodontal pockets of patients with exacerbated generalized periodontitis revealed hematogenous and epithelial cells at their first visit. Notably, single basal cells, which are normally absent, were found among the epitheliocytes [1]. They had a prismatic shape, elongated nucleus, peripheral nucleolus, sharp basophilia of the cytoplasm. The appearance of single basal cells makes it possible to confirm the severe epithelial lesions caused by the inflammatory process and demonstrates the course and severity of generalized periodontitis in the subjects. Signs of cytopathology were visualized in the cells in the form of numerous plasmolemma usurae. The peculiarity of the cytograms of the subjects was the absence of parabasal epitheliocytes, and, thereby, the cells of the second stage of differentiation.

The presence of intermediate cells was characteristic of cytograms of periodontal pockets. The cells, stained by Romanowsky-Giemsa, had a polygonal shape, optically clear cytoplasm, an eccentric elongated nucleus (Fig. 3a).

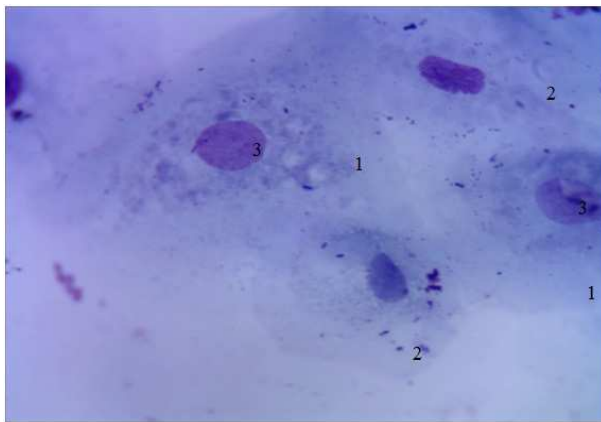


Fig. 3a. Cellular composition of the periodontal pocket in exacerbated generalized periodontitis. Romanowsky-Giemsa stain. Lens: 100×magnification; ocular lens: 10×magnification. 1 – intermediate cell; 2 – superficial cell; 3 – nucleus of intermediate cell.

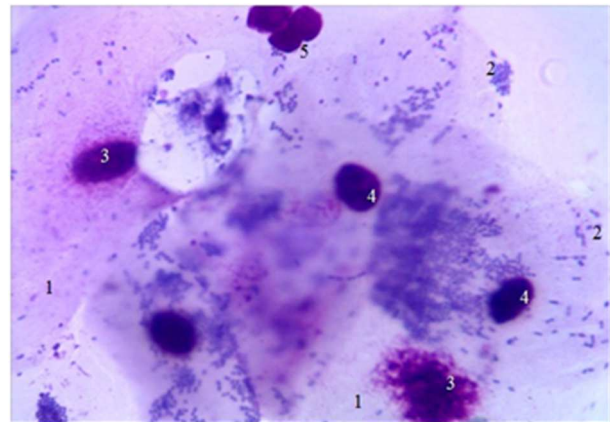


Fig. 3b. Cellular composition of the periodontal pocket. Romanowsky-Giemsa stain. Lens: 100×magnification; ocular lens: 10×magnification. 1 – type I superficial cell; 2 – type II superficial cell; 3 – nuclei of type I superficial cell; 4 – pyknotic nucleus of type II superficial cell; 5 – segmentonuclear leukocyte.

Noteworthy, intermediate epitheliocytes, which predominate in the cellular composition of subjects with intact gums [1] and are an indicator of normal maturation and differentiation of epitheliocytes, occur in the cytograms of this anatomical localization in a much smaller amount. The above indicates a disorder in the epithelium maturation caused by inflammatory process.

In the cellular composition of periodontal pockets superficial cells of two types are visualized and their identification is determined by the state of the nucleus (Fig. 3b).

Type I superficial epitheliocytes are represented by cells, which size is slightly larger than the intermediate ones. They had a clearly contoured centric nucleus of normal size.

Type II superficial cells, represented by superficial epitheliocytes with size, similar to Type I cells, though with pyknotic nucleus are characterized by clear contours, uncolored vacuoles, karyolysis and fragmentation with subsequent elimination from the cytoplasm.

The above findings suggest that prolonged inflammatory process in the periodontium causes disorders of epithelial keratinization, characterized by the absence of all representatives of the epithelial cell differon and altered ratio of cell types.

The findings of the study have been histologically and karyometrically confirmed at the stage of the analysis of histological structure of periodontal pockets [6]. A large number of neutrophilic granulocytes have been identified within hematogenous cells in periodontal pockets. In the exacerbated generalized periodontitis, the cellular composition of cytograms changes and is characterized by the predominance of neutrophilic granulocytes. It should be noted that most of them are degeneratively altered and were in a state of lysis, with hypersegmented nuclei, without junctions between them and specific granularity was absent.

Notably, quite numerous microbial compositions were visualized even in the cytoplasm of some cells in the form of cytoplasmic inclusions (Fig. 4a).

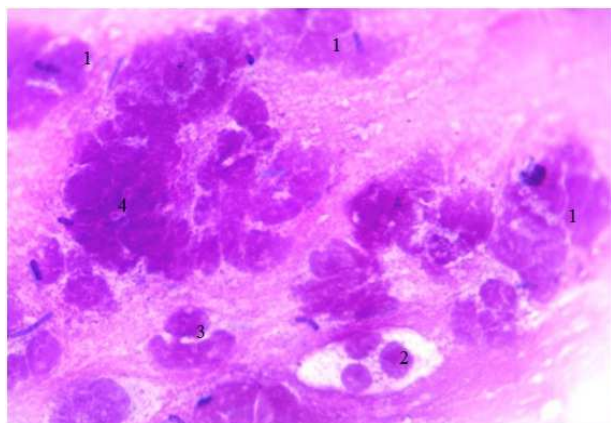


Fig. 4a. Cytogram of periodontal pocket in exacerbated generalized periodontitis. Romanowsky-Giemsa stain. Lens: 100×magnification; ocular lens: 10×magnification: 1 – lysed neutrophilic leukocyte; 2 – segmented nucleus; 3 – phagocytic-active neutrophilic leukocyte; 4 – cytoplasmic inclusions.

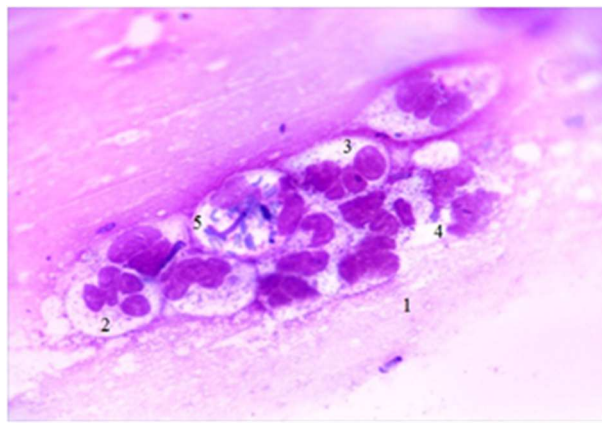


Fig. 4b. Cellular composition of the periodontal pocket after treatment with “Jen-metrohelur” (JenDental-Ukraine LLC) medication. Romanowsky-Giemsa stain. Lens: 100×magnification; ocular lens: 10×magnification: 1 – neutrophilic leukocytes; 2 – segmented nucleus; 3 – granularity; 4 – phagocytized neutrophilic leukocyte; 5 – inclusions of leukocyte cytoplasm.

On day 14 of treatment, the epithelial component of the cellular composition of the periodontal pockets remained unchanged, given that the number of cells with elements of cytopathology decreased, though the functional composition of neutrophilic granulocytes underwent significant changes.

The use of “Jen-metrohelur” (JenDental-Ukraine LLC) medication in the complex of local interventions enabled neutrophilic granulocytes to form cell clusters in the cellular composition of periodontal pockets. The number of lysed leukocytes decreased with clear visualization of the contours of phagocytic- active cells. Nuclei retained segmentation, and intra-cytoplasmic microorganisms were isolated (Fig. 4b).

Importantly, lymphocytes with large orbicular centric nucleus that occupied most of the cell were visualized in the cellular composition. The nucleus contained a significant amount of heterochromatin.

The above suggest correlation between cellular and humoral immunity of periodontal pockets, primarily due to polymorphonuclear leukocytes. These cells play a leading role in inflammatory responses and in protecting the body from the effects of foreign factors, including bacteria and their toxins.

The findings of the study with regard of restructuring of the cellular composition of periodontal pockets are confirmed by the several studies of predecessors [8] and show that penetration of periodontal pathogens leads to the formation of cytokines, a complex of highly active compounds, in the periodontal tissues, which are able to modify the activity of polymorphonuclear leukocytes and reduce their specific bactericidal properties. Of note, cytokines affect the periodontal tissues. Moreover, they cause subsequent activation of the cells that were involved in synthesis of cytokines, inhibit tissue repair and resynthesis of connective tissue, made by fibroblasts [6].

Conclusions

Thus, the findings of our clinical and morphological studies show that the use of “Jen-metrohelur” (JenDental-Ukraine LLC) medication in the complex treatment of generalized periodontitis is clinically effective, that is verified by the findings of the main clinical studies, as well as positive dynamics of changes in the PMA index (49.32 ± 1.98) and periodontal Russel index (3.89 ± 0.54) compared with the values of the above parameters at the first visit, and the findings of morphological study that showed a change in the functional status of segmentonuclear leukocytes in the dynamics of treatment. This provision suggests that, in generalized periodontitis, inflammatory cells, together with disorganized epithelial cells, connective tissue of the gums and periodontium, and bacteria form specific types of infiltrate in periodontal tissues, and the nature of these infiltrates initiates the recurrence rate of generalized periodontitis in patients.

References:

1. Gasyuk NV, Yeroshenko GA, Paliy OV. Suchasni uyavlennya pro etiologiyu ta patohenez khvorob parodonta. Svit medicini ta biolohiyi. 2013; 2 (38): 203-207. [in Ukrainian]
2. Shylyvskyy IV, Nemesh OM, Honta ZM. Suchasni pohlyady na etiologiyu ta patohenez zapalnykh zakhvoryuvan parodonta, yikh vzayemozvyazok iz patolohiyeyu sechovydilnoyi systemy (ohlyad literatury ta vlasni doslidzhennya). Bukovynskyy medychnyy visnyk. 2016; 20 (1): 224-227. [in Ukrainian]
3. Truhachova N. Meditsinskaya statistika. Fenikss. 2016; 336. [in Russian]
4. Ban A, Nemeth ZF, Szauter A, Soos S, Balasko M. Prevalence and severity of chronic paradontitis and oral mucosal lesions in chronic obstructive lung disease. Orvosi hetilap. 2018; 159 (21): 831-6.
5. Cheremisina VF; Berezhnyakova AI. Correlation of cytokine products levels in regulation mechanisms of bone tissue remodeling processes in paradontitis. World of medicine and biology. 2018; 64 (2):181-5.

6. Gasyuk NV, Yeroshenko GA. Feature of cellular composition of the gums in generalized periodontitis. World of medicine and biology. 2015, 1 (48): 17–20.
7. Kornman K S. The «innovator's dilemma» for periodontists. J. Periodontol 2010; 81: 646–649.
8. Kutepov IV, Lyashev YD, Artyushkova EB, Solin AV, Serikov VS, Lyashev AY, et al. Correction of acute parodontitis with indolicidin analogues. Bulletin of experimental biology and medicine. 2019; 167(1):47-9.
9. Müller F, Shimazaki Y, Kahabuka F, Schimmel M. Oral health for an ageing population: the importance of a natural dentition in older adults. Int Dent J. 2017;67(2):7-13.
10. Schmalz G. Release of prostaglandin E2, IL-6 and IL-8 from human oral epithelial culture models after exposure to compounds of dental materials. Eur. J. Oral. Sci. 2010; 108: 442-448.
11. Xiao L. New paradigms in inflammatory signaling in vascular endothelial cells. Am. J. Physiol. Heart Circ. Physiol. 2014; 306: 3: 317 – 325.

References

**КЛІНІКО-МОРФОЛОГІЧНІ АСПЕКТИ
КОМПЛЕКСНОГО ЛІКУВАННЯ
ГЕНЕРАЛІЗОВАНОГО ПАРОДОНТИТУ**
Савчук О.В., Гасюк Н.В., Клітинська О.В.,
Єрошенко Г.А., Залізняк М.С.

В статті приведені наукові дані стосовно обґрунтування клінічної ефективності використання препарату “Jen-metrohelur” у комплексному лікуванні генералізованого пародонтиту. В результаті комплексних клініко-морфологічних спостережень, показана позитивна динаміка змін індексу РМА ($49,32 \pm 1,98$) та пародонтального індексу за Расселом ($3,89 \pm 0,54$), а також зміни функціонального стану сегментарних лейкоцитів у динаміці лікування. Це положення дозволяє припустити, що при генералізованому пародонтиті клітини запального процесу разом з дезорганізованими клітинами епітелію, сполучної тканини власної пластинки ясен та бактеріями утворюють специфічні види інфільтратів, природа цих інфільтратів ініціює захворюваність рецидиви генералізованого пародонтиту у пацієнтів.

Ключові слова: генералізований пародонтит, ясна, пародонтальні кишені, клітини.

Стаття надійшла 15.05.2019 р.

**КЛИНИКО-МОРФОЛОГИЧЕСКИЕ АСПЕКТЫ
КОМПЛЕКСНОГО ЛЕЧЕНИЯ
ГЕНЕРАЛИЗОВАННОГО ПАРОДОНТИТА**
Савчук О.В., Гасюк Н.В., Клитинская О.В.,
Ерошенко Г.А., Залізняк М.С.

В статье приведены научные данные о обоснование клинической эффективности использования препарата “Jen-metrohelur” в комплексном лечении генерализованного пародонтита. В результате комплексных клинико-морфологических наблюдений, показана положительная динамика индекса РМА ($49,32 \pm 1,98$) и пародонтального индекса по Расселу ($3,89 \pm 0,54$), а также изменения функционального состояния сегментоядерных лейкоцитов в динамике лечения. Это положение позволяет предположить, что при генерализованном пародонтите клетки воспалительного процесса вместе с дезорганизованными эпителиоцитами, клетками соединительной ткани собственной пластинки десны и бактериями образуют специфические виды инфильтратов, природа этих инфильтратов определяет течение и периодичность обострений генерализованного пародонтита у пациентов.

Ключевые слова: генерализованный пародонтит, десна, пародонтальные карманы, клетки.

Рецензент Аветіков Д.С.

DOI 10.26724/2079-8334-2020-2-72-119-124

UDC 364-787.522-055.52-056.2/.3

**K.V. Sedykh, S.M. Shevchuk, V.V. Shevchuk, Y.O. Klymenko
Poltava V.G. Korolenko National Pedagogical University, Poltava**

PECULIARITIES OF PSYCHOSOCIAL MALADJUSTMENT IN WOMEN RAISING CHILDREN WITH MENTAL AND PHYSICAL DISABILITIES

e-mail: S_Sevchuk@online.ua

Theoretical study of scientific sources allowed to define the concept of "child with mental and physical disabilities", their classification and generalize views on the phenomenon of maladaptation. An empirical study of psychosocial maladjustment of women raising children with mental and physical disabilities involved 274 mothers who have children of different ages with developmental disorders. The study lasted from June 2018 to March 2019 in the Podilsky district of Poltava, where 110 women were interviewed, in Lubny and Lubny district – 112 women and Kozelshchyna district of Poltava region – 52 women. Based on the analysis of the obtained results, it was found that in urban localities the number of mothers with signs of psychological maladjustment is lower (in Podilsky district of Poltava – 56-61%, in Lubny and Lubny district – 72.5-73%) than in rural areas (in Kozelshchyna district – 91–95%).

Key words: psychosocial adaptation, psychological maladaptation, child with limited mental and physical abilities.

The work is a fragment of the research project “Psychology of personality development in the educational space”, state registration No. 0119U002283.

In recent years, there has been a significant increase in the number of children with mental and physical disabilities who need lifelong state assistance, which is possible with effective cooperation with their parents. As mental and physical lesions, personal interests and aptitudes, these children can study, receive professional education and in the future be more or less adapted to social life. Modern medical and social policy of the state is aimed at helping people with mental and physical disabilities, provides them