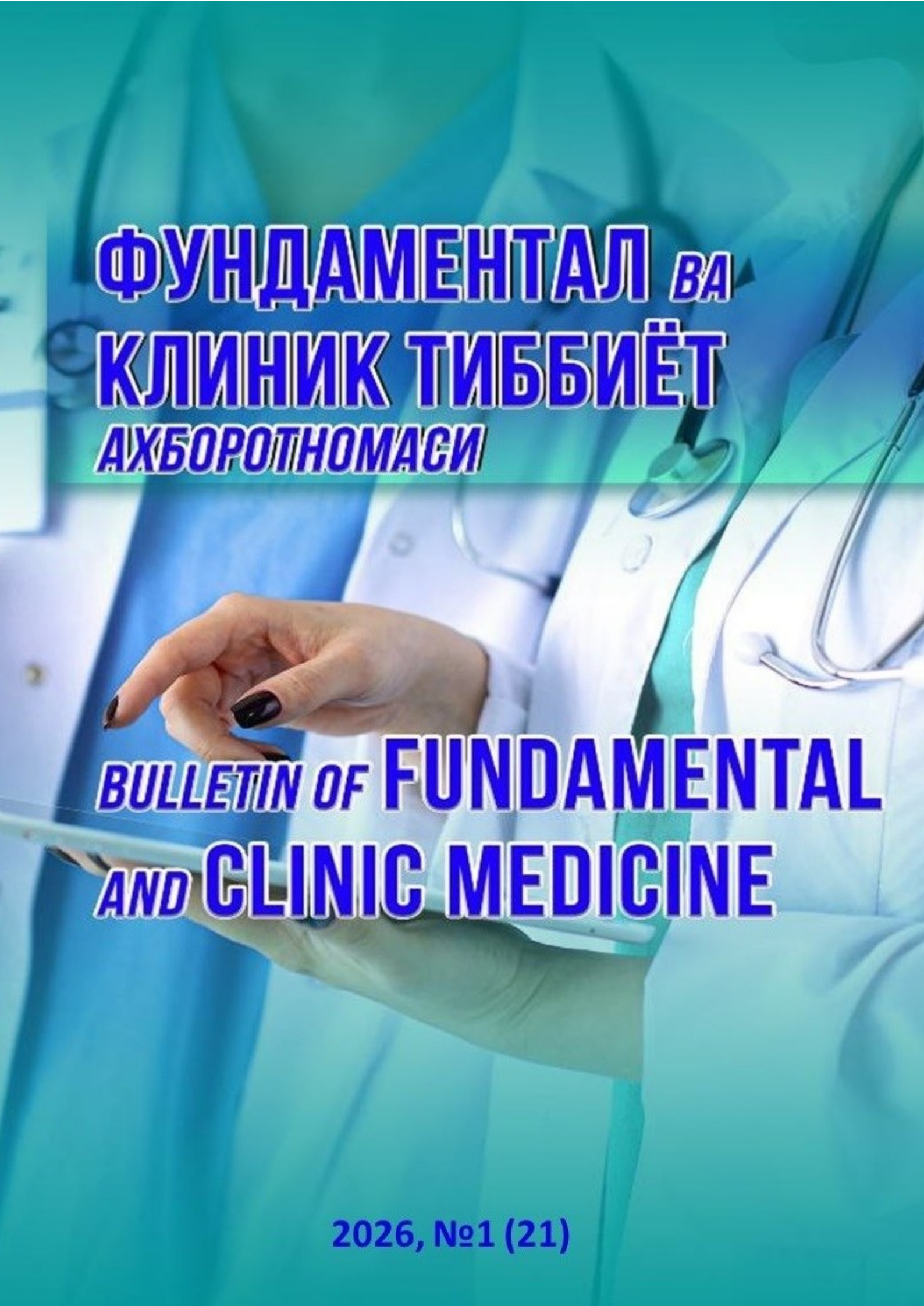

ФУНДАМЕНТАЛ ВА КЛИНИК ТИББИЁТ АХБОРОТНОМАСИ

BULLETIN OF FUNDAMENTAL AND CLINIC MEDICINE

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RECURRENT BRONCHITIS WITH COMORBID CONDITIONS: CLINICAL AND PATHOGENETIC CHARACTERISTICS AND PERSONALIZED TREATMENT APPROACHES

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Resume. *Recurrent bronchitis (RB) is one of the most common inflammatory diseases of the respiratory tract and often develops in the presence of various comorbid conditions. Cardiovascular diseases, diabetes mellitus, obesity, allergic disorders, and chronic infectious foci aggravate the clinical course of recurrent bronchitis, contribute to frequent relapses, and reduce the effectiveness of standard treatment approaches. This article analyzes the clinical and pathogenetic characteristics of recurrent bronchitis in patients with comorbid diseases and explores possibilities for optimizing personalized treatment strategies based on an individualized approach.*

Keywords: *recurrent bronchitis, comorbid diseases, clinical course, pathogenesis, personalized treatment, individualized therapy.*

ЙЎЛДОШ КАСАЛЛИКЛАР БИЛАН ҚАЙТАЛАНУВЧИ БРОНХИТ: КЛИНИК-ПАТОГЕНЕТИК ХУСУСИЯТЛАРИ ВА ДАВОЛАШДА ИНДИВИДУАЛ ЁНДАШУВЛАР

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Резюме. *Рецидивловчи бронхит (РБ) нафас йўлларининг энг кенг тарқалган яллиғланиш касалликларидан бири бўлиб, кўпинча турли коморбид ҳолатлар фонида ривожланади. Юрак-қон томир касалликлари, қандли диабет, семизлик, аллергик касалликлар ва сурункали инфекцион ўчоқлар ретсидивловчи бронхитнинг клиник кечишини оғирлаштиради, касалликнинг тез-тез қайталанишига олиб келади ҳамда стандарт даволаш усулларининг самарадорлигини пасайтиради. Ушбу мақолада коморбид касалликлар билан кечувчи ретсидивловчи бронхитнинг клиник ва патогенетик хусусиятлари таҳлил қилиниб, индивидуал ёндашувга асосланган персонификсирлашган даволаш стратегияларини оптималлаштириш имкониятлари ёритилади.*

Калит сўзлар: *рецидивловчи бронхит, коморбид касалликлар, клиник кечиш, патогенез, индивидуал терапия.*

РЕЦИДИВИРУЮЩИЙ БРОНХИТ С СОПУТСТВУЮЩИМИ ЗАБОЛЕВАНИЯМИ: КЛИНИКО-ПАТОГЕНЕТИЧЕСКИЕ ОСОБЕННОСТИ И ИНДИВИДУАЛЬНЫЕ ПОДХОДЫ К ЛЕЧЕНИЮ

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Резюме. *Рецидивирующий бронхит (РБ) является одним из наиболее распространённых воспалительных заболеваний дыхательных путей и часто развивается на фоне различных коморбидных состояний. Сердечно-сосудистые заболевания, сахарный диабет, ожирение, аллергические заболевания и хронические инфекционные очаги утяжеляют клиническое течение рецидивирующего бронхита, способствуют частым рецидивам и снижают эффективность стандартных методов лечения. В данной статье анализируются клинико-патогенетические характеристики рецидивирующего бронхита у пациентов с коморбидными заболеваниями и рассматриваются возможности оптимизации персонализированных лечебных стратегий на основе индивидуального подхода.*

Ключевые слова: *рецидивирующий бронхит, коморбидные заболевания, клиническое течение, патогенез, персонализированное лечение, индивидуальная терапия.*

Relevance. Recurrent bronchitis represents an important clinical problem in modern pulmonology, particularly when it occurs in the presence of comorbid diseases, which lead to more severe and prolonged disease courses. Research data indicate that cardiovascular diseases, diabetes mellitus, and metabolic disorders enhance chronic inflammatory activity in the airways and contribute to impaired bronchial patency. The comorbid background promotes activation of inflammatory mediators and oxidative stress, resulting in an increased frequency of relapses and reduced treatment efficacy [3,5].

Contemporary clinical observations demonstrate that cardiovascular diseases, diabetes mellitus, obesity, allergic disorders, gastroesophageal reflux disease, and chronic infectious foci significantly worsen the clinical course of recurrent bronchitis. In patients with comorbid conditions, bronchial inflammation persists for a longer duration, symptoms recur more frequently, and the effectiveness of standard treatment protocols is reduced.

From a pathogenetic perspective, comorbid diseases contribute to the chronicity of recurrent bronchitis through immune system imbalance, excessive production of inflammatory mediators, increased oxidative stress, and heightened bronchial reactivity [1]. In particular, metabolic syndrome, diabetes mellitus, and obesity are associated with microcirculatory disturbances and tissue hypoxia, which further intensify inflammatory processes.

At the same time, clinical practice often relies on standardized treatment approaches for recurrent bronchitis, which insufficiently account for the comorbid background. In such cases, therapeutic outcomes are limited, leading to frequent relapses and the development of complications. Therefore, the implementation of a personalized approach that considers individual clinical and pathogenetic characteristics of patients has become increasingly important in the management of recurrent bronchitis.

The concept of personalized treatment allows for optimal therapy selection based on the presence and severity of comorbid diseases, inflammatory activity, bronchial patency parameters, and the patient's overall functional status. This approach not only reduces clinical symptoms but also decreases relapse frequency, improves treatment effectiveness, and enhances patients' quality of life. Considering the above, the study of clinical and pathogenetic features of recurrent bronchitis in the presence of comorbid diseases and the optimization of personalized treatment strategies represents a highly relevant scientific and practical task.

In recent years, the influence of comorbid diseases on the clinical course of recurrent bronchitis has attracted increasing attention. In patients with allergic disorders, gastroesophageal reflux disease, and metabolic syndrome, bronchial inflammation tends to persist longer, and the disease relapses more frequently. Because standard therapeutic approaches often fail to achieve sufficient clinical outcomes in these cases, there is a growing need to develop personalized treatment methods that take individual pathogenetic mechanisms into account [7].

Materials and Methods. This single-center, observational, prospective clinical study was conducted at the pulmonology department between 2022 and 2024. The study included 65 patients diagnosed with recurrent bronchitis. The patients' ages ranged from 18 to 65 years, with a mean age of 35. Eligible participants had experienced at least two or three episodes of bronchitis per year, had a confirmed diagnosis based on clinical, laboratory, and instrumental examinations, and had at least one comorbid condition. Comorbidities included arterial hypertension, diabetes mellitus, obesity, allergic diseases, gastroesophageal reflux disease, and chronic infectious foci. Exclusion criteria comprised bronchial asthma, chronic obstructive pulmonary disease, tuberculosis, lung malignancies, severe heart failure, immunodeficiency conditions, pregnancy, and lactation.

All patients underwent a comprehensive clinical evaluation, including medical history collection, complete blood count, C-reactive protein assessment, glucose and lipid profile testing, chest radiography, and spirometry (FEV1, FVC, PEF). To identify and assess comorbid conditions, consultations with specialized physicians: cardiologists, endocrinologists, and allergologists were conducted.

During the treatment process, patients were divided into standard therapy and personalized therapy groups. Standard treatment included bronchodilators, mucolytics, anti-inflammatory, and symptomatic medications. Personalized therapy involved standard treatment supplemented with individually selected interventions based on the type and severity of comorbid conditions.

Treatment effectiveness was evaluated based on the regression of clinical symptoms, changes in spirometric parameters, relapse frequency over 6- and 12-month follow-up periods, and patient-reported quality-of-life indicators. Statistical analysis was performed using Statistica and SPSS software. Data were analyzed using Student's t-test and the χ^2 test, with statistical significance set at $p < 0.05$. The study was conducted in accordance with the principles of the Declaration of Helsinki, and written informed consent was obtained from all participants.

Results and Analysis. The study included 65 patients diagnosed with recurrent bronchitis who were followed up between 2022 and 2024. The patients' ages ranged from 18 to 65 years, with a mean age of 35 ± ___ years. Clinical observations demonstrated that all patients experienced at least two or more episodes of the disease per year, presenting with prolonged cough, sputum production, and general weakness. The results of the study showed that comorbid diseases significantly aggravated the clinical course of recurrent bronchitis. In particular, patients with cardiovascular diseases, diabetes mellitus, and metabolic disorders exhibited prolonged inflammatory processes, persistent clinical symptoms, and a reduced response to therapy. These

findings are consistent with studies conducted by Russian researchers, who have emphasized that the presence of comorbid pathologies contributes to frequent relapses and chronicity of bronchopulmonary diseases [2].

Analysis of comorbid conditions revealed that the majority of patients had one or more concomitant pathologies. The most common comorbidities were arterial hypertension, diabetes mellitus, obesity, and allergic diseases. Patients with multiple comorbid conditions demonstrated a more severe clinical course of recurrent bronchitis, with longer persistence of symptoms and a poorer response to treatment. Assessment of clinical symptoms indicated that patients with comorbid conditions experienced significantly longer durations of cough and increased sputum production. In particular, patients with diabetes mellitus and obesity showed prolonged inflammatory manifestations and more frequent relapses. In contrast, patients with allergic pathologies more often exhibited bronchial hyper reactivity and nocturnal cough episodes.

A decline in external respiratory function, specifically reduced FEV1 and PEF values, was more pronounced in patients with a comorbid background. Clinical observations by Russian pulmonologists have similarly reported a higher degree of bronchial obstruction in patients with metabolic syndrome and diabetes mellitus [3]. In patients with allergic diseases, increased bronchial hyperreactivity and nocturnal cough episodes were observed, which can be explained by the activation of allergic inflammatory mechanisms [4]. Spirometric examination confirmed a significant reduction in external respiratory function parameters in patients with comorbid conditions, with FEV1 and PEF values markedly lower than normal. Spirometric impairments were most pronounced in patients with multimorbid conditions.

During treatment, patients receiving a personalized therapeutic approach demonstrated more rapid regression of clinical symptoms. In this group, a decrease in cough intensity, reduced sputum production, and overall clinical improvement were observed earlier compared with patients receiving standard therapy. In addition, personalized treatment was associated with positive dynamics in spirometric parameters and restoration of bronchial patency. During 6- and 12-month follow-up periods, patients treated with a personalized approach exhibited a significant reduction in relapse frequency. In contrast, patients receiving standard therapy alone continued to experience a higher number of relapses, particularly those with multiple comorbid conditions.

The application of a personalized treatment strategy in this study resulted in faster symptom regression and a reduction in the number of relapses, confirming data from Russian literature regarding the effectiveness of individualized therapy. Specifically, selecting treatment tactics with consideration of comorbid conditions has been shown to reduce relapse frequency and improve patients' quality of life [5,6].

Thus, the obtained results confirm that comorbid diseases aggravate the clinical and pathogenetic course of recurrent bronchitis and negatively affect treatment effectiveness. At the same time, a personalized therapeutic approach that accounts for individual clinical characteristics and concomitant pathologies was found to be more effective in rapidly alleviating clinical symptoms, improving external respiratory function, and reducing disease recurrence. Moreover, the findings underscore the necessity of comprehensive assessment of comorbid conditions and implementation of individualized treatment strategies to enhance clinical outcomes and ensure long-term disease control.

Conclusion. The results of this study demonstrate that recurrent bronchitis occurring in the presence of comorbid diseases is characterized by a more complex and severe clinical and pathogenetic course. Comorbid conditions—particularly cardiovascular diseases, diabetes mellitus, obesity, and allergic disorders—contribute to prolonged bronchial inflammation, persistent clinical symptoms, and frequent disease relapses. During the study, patients with comorbid conditions showed decreased external respiratory function parameters, prolonged inflammatory activity, and a poorer clinical response to standard therapy, confirming the significant role of individual pathogenetic factors in disease progression. The clinical course of recurrent bronchitis was especially severe in patients with multimorbid conditions.

Patients receiving personalized treatment demonstrated more rapid regression of clinical symptoms, improved external respiratory function, and a significant reduction in disease recurrence during 6- and 12-month follow-up periods. These findings highlight the importance of selecting therapeutic strategies based on individual clinical and pathogenetic characteristics, as well as the presence of comorbid conditions.

Therefore, effective control of recurrent bronchitis and prevention of disease relapses require supplementation of standard treatment protocols with personalized approaches, comprehensive management of comorbid diseases, and implementation of individualized therapeutic strategies. Further large-scale and long-term clinical studies are warranted to advance this approach and optimize treatment outcomes.

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