

STUDY OF PATHOLOGICAL CHANGES IN THE CARDIOVASCULAR SYSTEM IN PULMONARY TUBERCULOSIS

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Abstract. Study of pathological changes in the cardiovascular system in pulmonary tuberculosis and development of modern therapeutic solutions.

Keywords: pulmonary tuberculosis, ventricular diastolic dysfunction, stress, smoking, anticholinergic drugs, b2-agonists.

ИЗУЧЕНИЕ ПАТОЛОГИЧЕСКИХ ИЗМЕНЕНИЙ СЕРДЕЧНО-СОСУДИСТОЙ СИСТЕМЫ ПРИ ТУБЕРКУЛЕЗЕ ЛЕГКИХ

Аннотация. Изучение патологических изменений сердечно-сосудистой системы при туберкулезе легких и разработка современных терапевтических решений.

Ключевые слова: туберкулез легких, желудочковая диастолическая дисфункция, стресс, курение, антихолинергические препараты, b2-агонисты.

Relevance. It is known that in tuberculosis and other chronic inflammatory processes in the lungs, inflammatory epithelial growth, squamous metaplasia and cancer in situ are not uncommon, which is considered a *conditio sine qua non* of malignant neoplasm. At the same time, inflammatory and cancerous epithelial growth are different entities. Although they may be “pre-neoplastic” from the point of view of histological differentiation, they do not necessarily become cancerous; rather, they are “conditionally precancerous” changes. They are interconnected, as the inflammatory growth of the epithelium, in no way capable of autonomously growing cancer cells, is 308diameter. On the other hand, the phenotypic diversity of lung cancer in patients with tuberculosis (their localization in the central and even peripheral departments, histological features, etc.), as well as the significant time interval between the development of both, do not allow Tuberculosis remains the leading cause of morbidity and mortality worldwide. Every year, 8.8 million cases of tuberculosis are recorded worldwide. At the same time, 1.61 million people are diagnosed with lung cancer worldwide. In some countries, the number of patients with malignant lung diseases admitted to tuberculosis hospitals is increasing, which makes it difficult to accurately diagnose tuberculosis and malignant neoplasms. There are many similarities between these two diseases, both are widespread, affect the lung parenchyma, and are primarily characterized by similar symptoms. However, there are many differences between these two nosologies: the consequences of different etiologies and the management of patients in general are different.

Currently, special attention is paid to the study of risk factors for pulmonary tuberculosis, including urban air pollution, increased industrial dust, age, tobacco smoking, respiratory tract infections, their frequent exacerbations, and exacerbation of obstructive pulmonary disease.

Thus, tobacco smoking is associated not only with the occurrence of pathological processes in the lungs, but also with the development of systemic inflammatory reactions, oxidative stress, vascular endothelial dysfunction, increased activity of procoagulant factors, increased expression of oncogenes, and other systemic effects [1-7].

Left ventricular dysfunction and the occurrence of ventricular arrhythmias in patients with pulmonary tuberculosis have been relatively poorly studied. Researchers Incalzi RA, Pistelli R et al. There is a correlation between left ventricular function and cardiac rhythm disturbances in patients with pulmonary tuberculosis. Ventricular arrhythmias were monitored for 24 hours and the study was repeated because the clinical manifestations of respiratory failure improved.

Left ventricular diastolic dysfunction is one of the factors contributing to the development of ventricular arrhythmias. The authors found a direct relationship between the degree of respiratory failure and the manifestation of left ventricular diastolic dysfunction, while blood gas parameters did not correlate with the clinical manifestations of arrhythmic episodes. In clinical practice, a detailed diagnostic assessment of episodes of ventricular arrhythmia that occurred against the background of left ventricular diastolic dysfunction is recommended, since this clinic can be hidden myocardial ischemia, painless forms of angina pectoris, and right ventricular overload during the formation of cor pulmonale [1].

It is worth noting that with the development of arrhythmia, the clinical manifestations of respiratory failure also worsen, i.e., a syndrome of mutual overload is formed. Thus, the main morphological sign of ventricular tachycardia, the discreteness of the "P" wave with different P-P, P-R, RR intervals in leads I, II, III of the ECG, is mainly associated with the development and occurrence of respiratory failure. The prognosis for pulmonary tuberculosis with the development of this type of cardiac arrhythmia is considered unfavorable [10-12]. Studies of arrhythmia in patients with pulmonary tuberculosis are clearly insufficient - there are many unresolved problems, in particular, the role of secondary pulmonary hypertension has been practically not studied [14,17]. The role of drugs is also poorly studied. This is no less important among other problems.

Extrapulmonary systemic effects of pulmonary tuberculosis include weight loss, functional impairment, malnutrition and skeletal muscle atrophy, mental disorders, i.e., the clinical syndrome of secondary trophic deficiency. This problem is of increasing interest to researchers in patients with a therapeutic profile, including pulmonary tuberculosis [15, 16].

It is known that secondary immunological deficiency exists in patients with chronic obstructive pulmonary disease. Violation of the differentiation of highly organized tissues can lead to a decrease in the immune system due to tissue hypoxia in patients with broncho-obstructive syndrome, as well as to a deficiency of immunity against infection and a violation of immunological dependence.

There is a clear correlation between a decrease in myocardial contractility and increased autosensitization. With an increase in the inflammatory process in the lungs in patients, sensitivity to cardiac antigens is determined. In patients with reduced myocardial contractility, sensitivity to cardiac antigens is preserved during remission of chronic obstructive pulmonary disease, which indicates that autoimmune mechanisms are activated in the development of myocardial lesions in them. Autoimmune damage to the myocardium inevitably changes its bioelectrical properties, which leads to the development of rhythm disturbances in the heart [18, 19]. In recent years, anticholinergic drugs (ipratropium bromide, tiotropium bromide), β_2 -agonists (short-acting - isoprenaline, salbutamol, fenoterol, long-acting - salmeterol, formoterol) and methylxanthines have been used as bronchodilators for pulmonary tuberculosis. M-anticholinergics do not change the heart rate (HR) and blood pressure, but in some cases, i.e., when used irregularly, they can cause arrhythmias.

Ipratropium bromide causes a short-term increase in heart rate. Tachycardia occurs in 0.01% to 1% of patients with tiotropium bromide. In isolated cases, supraventricular tachycardia and ventricular fibrillation have been observed.

According to most researchers, the selectivity of β_2 -agonists is dose-dependent [1, 3].

The appointment of β_2 -adrenergic agonists is associated with adverse effects on the heart, which is mainly associated with the development of sinus tachycardia [3]. Potentially, this group of drugs is less effective in the following diseases: sinus tachycardia, when ischemic changes in the myocardium are observed, in acute and chronic heart failure, in cardiac arrhythmias that can lead to sudden death [6].

Another mechanism that can lead to cardiac arrhythmias when using β_2 -agonists may be hypokalemia. β_2 -agonists, with the correct dosage regimen, do not cause arrhythmogenic effects and do not aggravate existing cardiac arrhythmias. However, uncontrolled use of β_2 -agonists is observed, especially in severe forms of pulmonary tuberculosis complicated by hypoxemia, which increases their cardiotoxic effect [1, 5].

When prescribing theophyllines, the process of controlling therapeutic doses is complicated, which, if exceeded, can lead to cardiotoxic

effects, sinus tachycardia, premature ventricular contractions, supraventricular tachycardia, ventricular fibrillation and other arrhythmias may develop.

REFERENCES

1. Gafurovna, A. N., Xalimovich, M. N., & Komilovich, E. B. Z. (2023). KLIMAKTERIK YOSHDAGI AYOLLARDA ARTERIAL GIPERTENZIYANING KECHISHI. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 23(6), 26-31.
2. Komilovich, E. B. Z. (2023). Coronary Artery Disease. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 3(12), 81-87.
3. Эргашов, Б. К. (2023). Артериальная Гипертония: Современный Взгляд На Проблему. *Research Journal of Trauma and Disability Studies*, 2(11), 250-261.
4. Эргашов, Б. К., & Мавлонов, Н. Х. (2024). ГИПЕРТОНИЧЕСКАЯ БОЛЕЗНЬ ЛЕЧЕНИЕ. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(7), 243-250.
5. Komilovich, E. B. (2024). HYPERTENSION TREATMENT. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(7), 227-234.
6. Komilovich, E. B. (2024). CORONARY HEART DISEASE. ANGINA EMERGENCY CARE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(7), 235-242.
7. Эргашов, Б. К. (2024). ГИПЕРТОНИЧЕСКАЯ БОЛЕЗНЬ ДИАГНОСТИКА. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 70-78.
8. Эргашов, Б. К. (2024). ИШЕМИЧЕСКАЯ БОЛЕЗНЬ СЕРДЦА. СТЕНОКАРДИЯ ПРОФИЛАКТИКА. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 21-31.
9. Komilovich, E. B. (2024). YURAK ISHEMIK KASALLIGI. STENOKARDIYANI DAVOLASHNING ZAMONAVIY TAMOIYILLARI. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 3-11.
10. Komilovich, E. B., & Jamshidovich, A. S. (2024). HYPERTENSION, CLASSIFICATION AND PATHOGENESIS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 50-58.
11. Komilovich, E. B. (2024). HYPERTENSION DIAGNOSTICS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 42-49.
12. Komilovich, E. B., & Xalimovich, M. N. (2024). YURAK ISHEMIYASIDA HAMSHIRALIK DIAGNOSTIKASI VA PARVARISHI. *Journal of new century innovations*, 46(1), 79-85.

13. Axmedov, S. (2025). THE USE OF MIRENA IN GYNECOLOGIC DISEASES AND ITS SIGNIFICANCE. *Modern Science and Research*, 4(4), 304-312.
14. Saodat, A., Vohid, A., Ravshan, N., & Shamshod, A. (2020). MRI study in patients with idiopathic coxarthrosis of the hip joint. *International Journal of Psychosocial Rehabilitation*, 24(2), 410-415.
15. Axmedov, S. J. (2023). EFFECTS OF THE DRUG MILDRONATE. *Innovative Development in Educational Activities*, 2(20), 40-59.
16. Jamshidovich, A. S. (2023). ASCORBIC ACID: ITS ROLE IN IMMUNE SYSTEM, CHRONIC INFLAMMATION DISEASES AND ON THE ANTIOXIDANT EFFECTS. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 3(11), 57-60.
17. Jamshidovich, A. S. (2023). THE ROLE OF THIOTRIAZOLINE IN THE ORGANISM. *Ta'lim innovatsiyasi va integratsiyasi*, 9(5), 152-155.
18. Jamshidovich, A. S. (2023). HEPTRAL IS USED IN LIVER DISEASES. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 35(3), 76-78.
19. Jamshidovich, A. S. (2023). EFFECT OF TIVORTIN ON CARDIOMYOCYTE CELLS AND ITS ROLE IN MYOCARDIAL INFARCTION. *Gospodarka i Innowacje.*, 42, 255-257.
20. Jamshidovich, A. S. (2024). NEUROPROTECTIVE EFFECT OF CITICOLINE. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(1), 1-4.
21. Jamshidovich, A. S. (2024). THE ROLE OF TRIMETAZIDINE IN ISCHEMIC CARDIOMYOPATHY. *Journal of new century innovations*, 44(2), 3-8.
22. Jamshidovich, A. S. (2024). ВСЕ ЭФФЕКТЫ ПРЕПАРАТА ИМУДОН. *TADQIQOTLAR*, 31(2), 39-43.
23. Jamshidovich, A. S. (2024). SPECIFIC FEATURES OF THE EFFECT OF THE HEPARIN DRUG. *TADQIQOTLAR*, 31(2), 34-38.
24. Jamshidovich, A. S. (2024). USE OF GLUCOCORTICOSTEROIDS IN PEDIATRIC PRACTICE. *TADQIQOTLAR*, 31(2), 29-33.
25. Jamshidovich, A. S. (2024). РОЛЬ ИНТЕЛЛАНОВОГО СИРОПА И ЦИАНОКОБАЛАМИНА В УЛУЧШЕНИИ ПАМЯТИ. *TADQIQOTLAR*, 31(2), 44-48.
26. Jamshidovich, A. S. (2024). TREATMENT OF POLYNEUROPATHY WITH BERLITHION. *Ta'limning zamonaviy transformatsiyasi*, 4(1), 201-209.

27. Jamshidovich, A. S. (2024). USE OF ASCORIL IN BRONCHIAL ASTHMA. *Ta'limning zamonaviy transformatsiyasi*, 4(1), 191-200.
28. Jamshidovich, A. S. (2024). THE IMPORTANCE OF THE DRUG ARTOXAN. *Ta'limning zamonaviy transformatsiyasi*, 4(1), 182-190.
29. Jamshidovich, A. S. (2024). THE ROLE OF RENGALIN IN CHRONIC BRONCHITIS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(4), 116-123.
30. Jamshidovich, A. S. (2024). THE ROLE OF ALMAGEL DRUG IN GASTRIC AND DUODENAL WOUND DISEASE. *Ta'limning zamonaviy transformatsiyasi*, 4(1), 173-181.
31. Jamshidovich, A. S. (2024). THE ROLE OF CODELAK BRONCHO SYRUP IN CHILDREN'S PRACTICE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(4), 109-115.
32. Jamshidovich, A. S. (2024). THE AEVIT DRUG EFFECT. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(4), 124-132.
33. Jamshidovich, A. S. (2024). THE IMPORTANCE OF ALCHEBA DRUG IN POST-STROKE APHASIA. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(4), 132-138.
34. Jamshidovich, A. S. (2024). THE ROLE OF HYALURON CHONDRO DRUG IN OSTEOARTHRISIS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(4), 139-145.
35. Jamshidovich, A. S. (2024). EFFECT OF SIMETHICONE DROP IN FLATULENCE. *Лучшие интеллектуальные исследования*, 14(1), 95-101.
36. Jamshidovich, A. S. (2024). BENEFITS OF BETADINE SOLUTION. *Лучшие интеллектуальные исследования*, 14(1), 116-122.
37. Jamshidovich, A. S. (2024). EFFECT INHALED GLUCOCORTICOIDS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND BRONCHIAL ASTHMA. *TADQIQOTLAR*, 31(1), 171-180.
38. Jamshidovich, A. S. (2024). USE OF VIGANTOL IN RICKETS. *Лучшие интеллектуальные исследования*, 14(1), 102-108.
39. Jamshidovich, A. S. (2024). THE VITAPROST DRUG RESULTS. *Лучшие интеллектуальные исследования*, 14(1), 109-115.
40. Jamshidovich, A. S. (2024). THE ROLE OF BISEPTOL DRUG IN URINARY TRACT DISEASE. *Лучшие интеллектуальные исследования*, 14(1), 89-94.

41. Jamshidovich, A. S. (2024). PROPERTIES OF THE DRUG DORMIKIND. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(5), 88-92.
42. Jamshidovich, A. S., & Komilovich, E. B. (2024). IMMUNOMODULATORY FUNCTION OF DIBAZOL DRUG. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(5), 83-87.
43. Jamshidovich, A. S., & Komilovich, E. B. (2024). ADVANTAGES OF THE DRUG NEPTRAL. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(5), 98-101.
44. Эргашов, Б. К., & Ахмедов, Ш. Ж. (2024). ГИПЕРТОНИЧЕСКАЯ БОЛЕЗНЬ ЭТИОЛОГИЯ. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 59-69.
45. Komilovich, E. B., & Jamshidovich, A. S. (2024). HYPERTENSION, CLASSIFICATION AND PATHOGENESIS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 50-58.
46. Komilovich, E. B., & Jamshidovich, A. S. (2024). YURAK ISHEMIYASI. STENOKARDIYADA SHOSHILINCH TIBBIY YORDAM. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 12-20.
47. Komilovich, E. B., & Jamshidovich, A. S. (2024). HYPERTENSION ETIOLOGY. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 32-41.
48. Komilovich, E. B., & Jamshidovich, A. S. (2024). CARDIAC ISCHEMIA. ANGINA NURSING DIAGNOSIS AND CARE. *Journal of new century innovations*, 46(1), 44-52.
49. Jamshidovich, A. S. (2024). IMPORTANT INDICATIONS OF THE DRUG WOBENZYM. *Journal of new century innovations*, 46(1), 29-32.
50. Jamshidovich, A. S. (2024). THE RESULTS OF THE EFFECT OF THE DRUG VALIDOL. *Journal of new century innovations*, 46(1), 19-23.
51. Jamshidovich, A. S. (2024). VIFERON USE IN CHILDREN. *Journal of new century innovations*, 46(1), 24-28.
52. Jamshidovich, A. S. (2024). USE OF DUSPATALIN (MEBEVERINE HYDROCHLORIDE) IN GASTROINTESTINAL DISEASES. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(5), 93-97.
53. Jamshidovich, A. S. (2024). ЭФФЕКТЫ СИРОПА ДЕПАКИНА (ВАЛЬПРОЕВАЯ КИСЛОТА). *Ta'lim innovatsiyasi va integratsiyasi*, 14(2), 148-152.

54. Jamshidovich, A. S., & Komilovich, E. B. (2024). THE IMPORTANCE OF THE DRUG ALLOCHOL FOR CHRONIC CHOLECYSTITIS. *Ta'lim innovatsiyasi va integratsiyasi*, 14(2), 133-137.
55. Jamshidovich, A. S., & Komilovich, E. B. (2024). ВАЖНЫЕ СВОЙСТВА ПРЕПАРАТА ДЕ-НОЛ (субцитрат висмута). *Ta'lim innovatsiyasi va integratsiyasi*, 14(2), 143-147.
56. Jamshidovich, A. S., & Komilovich, E. B. (2024). SPECIAL FEATURES OF BUDECTON DRUG. *Ta'lim innovatsiyasi va integratsiyasi*, 14(2), 138-142.
57. Jamshidovich, A. S. (2024). ЭФФЕКТИВНОЕ ВОЗДЕЙСТВИЕ ПРЕПАРАТА КЕЙВЕР. *Ta'lim innovatsiyasi va integratsiyasi*, 15(3), 137-143.
58. Jamshidovich, A. S. (2024). USEFUL PROPERTIES OF THE DRUG YODOFOL. *Ta'lim innovatsiyasi va integratsiyasi*, 15(3), 144-149.
59. Jamshidovich, A. S. (2024). FITOTERAPIYANING AKUSHER-GINEKOLOGIYADA AHAMIYATI. *Лучшие интеллектуальные исследования*, 15(2), 121-125.
60. Jamshidovich, A. S. (2024). THE IMPORTANCE OF THE DRUG DOPROKIN. *Лучшие интеллектуальные исследования*, 15(2), 109-114.
61. Jamshidovich, A. S. (2024). THE EFFECT OF DOSTINEX ON THE BODY. *Лучшие интеллектуальные исследования*, 15(2), 115-120.
62. Jamshidovich, A. S. (2024). РЕЗУЛЬТАТЫ ЭФФЕКТИВНОГО ДЕЙСТВИЯ ПРЕПАРАТА КАНЕФРОН. *Лучшие интеллектуальные исследования*, 15(2), 138-143.
63. Jamshidovich, A. S. (2024). СОВРЕМЕННЫЕ ЭФФЕКТЫ ПРЕПАРАТА ИНДОЛ. *Лучшие интеллектуальные исследования*, 15(2), 126-131.
64. Jamshidovich, A. S. (2024). EFFECT OF ISMIZHEN DRUG ON BODY IMMUNITY. *Лучшие интеллектуальные исследования*, 15(2), 132-137.
65. Jamshidovich, A. S. (2024). POSITIVE EFFECTS OF THE DRUG CARCIL. *Ta'lim innovatsiyasi va integratsiyasi*, 15(3), 127-131.
66. Jamshidovich, A. S. (2024). РЕЗУЛЬТАТЫ ЭФФЕКТИВНОГО ДЕЙСТВИЯ КАВИНТОНА. *Ta'lim innovatsiyasi va integratsiyasi*, 15(3), 132-136.
67. Jamshidovich, A. S. (2024). Современный Эффект Спрея Мометазон. *Research Journal of Trauma and Disability Studies*, 3(3), 62-65.
68. Jamshidovich, A. S. (2024). THE ROLE OF" SIMONTE PLUS" DRUG IN THE MODERN TREATMENT OF BRONCHIAL ASTHMA. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(5), 66-70.

69. Jamshidovich, A. S. (2024). FEATURES OF THE BIOMECHANISM OF THE DRUG LEVOMYCETIN (CHLORAMPHENICOL). *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(9), 298-301.
70. Jamshidovich, A. S. (2024). THE MOST IMPORTANT INDICATORS OF OMEGA 3 SUBSTANCE IN THE METABOLISM OF THE HUMAN BODY. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(10), 113-117.
71. Komilovich, E. B., & Khalimovich, M. N. (2024). CARDIAC ISCHEMIA. ANGINA CLINICAL FORMS AND DIAGNOSIS. *Journal of new century innovations*, 46(1), 70-78.
72. Komilovich, E. B. (2024). CORONARY HEART DISEASE. ANGINA EMERGENCY CARE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(7), 235-242.
73. Komilovich, E. B. (2024). YURAK ISHEMIK KASALLIGI. STENOKARDIYANI DAVOLASHNING ZAMONAVIY TAMOIYILLARI. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 3-11.
74. Jamshidovich, A. S. (2024). THE MOST IMPORTANT BENEFITS OF GINGER FOR THE HUMAN BODY'S IMMUNITY. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(11), 269-273.
75. Axmedov, S. (2024). THE SPECIFIC EFFECT OF THE DRUG "BAKLASAN" IN CEREBROVASCULAR DISEASES AND ITS PRACTICAL SIGNIFICANCE TODAY. *Modern Science and Research*, 3(12), 485-492.
76. Komilovich, E. B. Z. (2023). Coronary Artery Disease. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 3(12), 81-87.
77. Komilovich, E. B. (2024). CORONARY HEART DISEASE. ANGINA TREATMENT. *Journal of new century innovations*, 46(1), 95-104.
78. Komilovich, E. B. (2024). HYPERTENSION TREATMENT. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(7), 227-234.
79. Эргашов, Б. К. (2024). ИШЕМИЧЕСКАЯ БОЛЕЗНЬ СЕРДЦА. СТЕНОКАРДИЯ ПРОФИЛАКТИКА. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 21-31.
80. Axmedov, S. (2025). ВАЖНЫЕ СВОЙСТВА ПРЕПАРАТА ЭСКУЗАН ПРИ СОСУДИСТЫХ ЗАБОЛЕВАНИЯХ. *Modern Science and Research*, 4(1), 380-387.
81. Эргашов, Б. К. (2024). ГИПЕРТОНИЧЕСКАЯ БОЛЕЗНЬ ДИАГНОСТИКА. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 70-78.

82. Komilovich, E. B. (2024). HYPERTENSION DIAGNOSTICS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 38(6), 42-49.
83. Ravshanovna, X. L. (2021, June). MINIMALLY INVASIVE METHODS OF TREATMENT OF DENTAL CARIES IN ADULTS. In " *ONLINE-CONFERENCES*" *PLATFORM* (pp. 118-119).
84. Axmedov, S. (2025). SPECIFIC PROPERTIES OF ROXERA DRUG IN CARDIOVASCULAR DISEASES. *Modern Science and Research*, 4(2), 472-479.
85. Axmedov, S. (2025). THE DRUG PHYSIOTENS, THE FEATURES OF THE DRUG AND ITS USE IN THE FIELD OF CARDIOLOGY, IN PATIENTS WITH HEAVY BODY WEIGHT. *Modern Science and Research*, 4(3), 350-358.