ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ARRHYTHMIA IN PATIENTS WITH CHRONIC HEART FAILURE AND TYPE 2 DIABETES MELLITUS

Normatov Murod Buribayevich

Uzokov Jurabek Bakhtiyorovich

Samarkand State Medical University, Samarkand, Uzbekistan

ABSTRACT: The aim of the work is to study the type, frequency and features of the course of rhythm disturbances in patients with chronic heart failure (CHF), depending on the etiology, including in the presence of type 2 diabetes mellitus (DM).

Material and methods. In-depth clinical observations were carried out with the analysis of indicators obtained by electro- and echocardiography, performing a 6-minute walking test, and monitoring the ECG by Holter, in 197 patients with the presence of registered cardiac arrhythmias. Men predominated (56-61%), the average age was 61.3 ± 0.63 years. CHF was determined in 74 patients (group 1), in 80 — a combination of CHF mainly of the II functional class according to NYHA and type 2 diabetes (group 2), in 43 - type 2 diabetes (group 3) according to the criteria American Diabetes Association (2011). The groups were comparable in gender, age, severity and presence of complications. The exclusion criteria are acute forms of coronary heart disease, decompensation of CHF and DM, the presence of CHF according to the National Recommendations of the IOC and the OSS (2009).

Results. In patients with CHF, the highest frequency of ventricular arrhythmias was found — about half (43.2%; $p < 0.02$) of patients, atrial fibrillation — in every tenth (10.8%). In combination with CHF and type 2 diabetes, combined cardiac arrhythmias prevailed (41.2%; $p < 0.01$): supraventricular and ventricular, including such hemodynamically and prognostically significant arrhythmias as atrial fibrillation and ventricular arrhythmias of high gradations. Supraventricular cardiac arrhythmias have been reported mainly in patients with DM Type 2 (62.8%).

Conclusion. A high frequency of hemodynamically and prognostically unfavorable arrhythmias is diagnosed mainly in patients with CHF in combination with type 2 diabetes, which is due to both aggravation of myocardial insufficiency and pathogenetic factors associated with diabetes (dysglycemia, cardiovascular autonomic neuropathy, diabetic nephropathy).

Key words: Heart rhythm disorder; chronic heart failure; type 2 diabetes mellitus.

INTRODUCTION

By the beginning of the XXI century, the prevalence of chronic heart failure (CHF) was 7% (7.9 million people). At the same time, according to the State Register of patients with Diabetes Mellitus As of January 2011, there are 3.4 million patients in the Uzbek population in terms of access to medical institutions, and according to the results of epidemiological studies conducted by the. It is natural that in a number of studies The prevalence of type 2 diabetes in patients with CHF ranged from 15 to 25%. It is known that as the presence of the

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

2nd DM as it can provoke heart damage and the development of CHF, CHF itself contributes to the development of insulin resistance and the appearance of new cases of diabetes type 2 or the aggravation of its course; thus, in such a clinical scenario, a complex reciprocal relationship between CHF and type 2 diabetes occurs type. The association of CHF and type 2 diabetes forms a high incidence of complications, including in the form of cardiac arrhythmias. Pathophysiological mechanisms the development of arrhythmias in CHF and type 2 diabetes have common features and a multifactorial character. Thus, in the presence of CHF, there is an overload of volume and pressure, interstitial fibrosis, neurohormonal activation, endothelial dysfunction, an imbalance of proinflammatory cytokines, which contributes to the development of cardiac arrhythmias. However, in the presence of SD Type 2 cardiovascular autonomic neuropathy is registered, the occurrence of which is associated with the presence of dysglycemia, insulin resistance and endothelial dysfunction, as well as with disorders hemostasis systems and hyperproduction of proinflammatory cytokines. Typical for patients with diabetes Type 2 combination of morphofunctional and biochemical changes of the myocardium, which is commonly called diabetic cardiomyopathy, leads to impaired diastolic processes and myocardial contractility, progression of atherosclerosis with the formation of myocardial fibrosis and the development of the morphological basis of the phenomenon of re-entry, an increase in arrhythmogenic readiness of the myocardium. The purpose of this study is to study the type, frequency and features of the course of rhythm disturbance in patients with CHF, depending on the etiology, including in the presence of type 2 diabetes.

MATERIALS AND METHODS OF RESEARCH

197 patients with a registered cardiac arrhythmia were examined. In 74 patients (Group 1) CHF was diagnosed, 80 had a combination of CHF and type 2 diabetes (group 2), 43 had type 2 diabetes (3rd group). The diagnosis of CHF was carried out in accordance with the criteria of the National Recommendations VNOK and OSS on the diagnosis and treatment of CHF (third revision, 2009). To determine the severity of CHF, the R. Cody clinical condition assessment scale modified by V.Y. Mareev and the distance at a 6-minute walking test taking into account age, gender and body mass index. Diagnosis of diabetes Type 2 was installed in accordance with the criteria WHO. The exclusion criteria were the presence of acute forms of coronary heart disease — coronary heart disease (according to the WHO classification with additions in 2007), decompensation of blood circulation (stage III CHF), decompensation of type 2 diabetes. The scope of research included generally accepted clinical and radiological studies (including assessment of the clinical condition according to the R. Cody scale modified by V.Y. Mareev), methods of functional diagnosis (electrocardiography, including daily Holter ECG monitoring, Doppler echocardiography) and complied with National Guidelines for the diagnosis and Treatment of CHF (2009). The 6-minute walking test was performed in accordance with the standard protocol. Intracardiac and pulmonary hemodynamics were studied using a ViVid-7 ultrasound analyzer (GE, USA) using standard methods. Stages of diastolic dysfunction they were established in accordance with the standards depending on age, taking into account National recommendations for the diagnosis and treatment of CHF. Glycated hemoglobin (HbA1c) was determined and glucose levels were assessed during the day. Patients received adequate CHF therapy in accordance with National Guidelines. Statistical processing of the obtained data was carried out using the Statistica 6.0 program. The statistical significance of the difference in averages was determined using the Student's criterion at the level of the significance of $p<0.05$. When

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

analyzing distributions that differ from normal ones, nonparametric criteria were used. Qualitative differences between the groups were determined using the exact Fisher criterion (at n<5) or c2 (for n>5). The differences were considered statistically significant at p<0.05.

THE RESULTS AND THEIR DISCUSSION

There were no statistically significant gender differences; in patients of group 1, there was a tendency to a predominance of men (55.4%), in group 3 — women (58.1%). The average age of patients in group 1 was 62.1 ± 2.43 years, and group 2 was 60.3 ± 3.28 years, 3rd — 58.5 ± 2.76 years (p>0.05). When analyzing the etiological factors of CHF in patients of group 1, it is most often diagnosed Coronary heart disease — in 55 (74.3%) patients, among the forms of which stress angina prevailed, mainly II functional class according to NYHA (in 28 patients) and postinfarction cardiosclerosis (in 21 patients). In patients of group 2, coronary heart disease and arterial hypertension competed; at the same time, more than half (67.5%) of patients had a combination of them, cardiovascular diseases were diagnosed before the detection of type 2 diabetes in 43 (53.8%) patients. Arterial hypertension was diagnosed in 34 (79.1%) patients of the 3rd group. In most patients with type 2 diabetes, the level of HbA1c was less than 7.5%. Among the complications of type 2 diabetes Neuropathy was in a leading position. Dyslipidemia was detected in most patients. When assessing the functional state of the kidneys, elevated creatinine levels in the blood (more than 133 mmol/l in men and more than 124 mmol/l in women) were determined in 31.3% of patients. The average value of this indicator in patients of group 1 was 79.8 ± 12.5 mmol/l, Group 2 — 119.1 ± 13.7 mmol/l (p < 0.05), group 3 - 97.8 ± 11.4 mmol/l (p < 0.05). The majority of patients have normal hemoglobin levels. When analyzing the type and frequency of cardiac arrhythmias and conduction according to ECG data at rest, it was found that in patients with CHF, the highest frequency of ventricular arrhythmias was found — in 43.2% of patients, atrial fibrillation — in every tenth (10.8%). In the 2nd group of patients of different gradations, in every fourth patient, supraventricular cardiac arrhythmias were registered mainly in patients with type 2 diabetes (62.8%). Thus, according to ECG data at rest in patients The highest frequency of heart failure was found in group 1, combined cardiac arrhythmias prevailed in patients of group 2: supraventricular and ventricular, Including such hemodynamically and prognostically significant arrhythmias as atrial fibrillation and high-grade arrhythmias, supraventricular cardiac arrhythmias were most often recorded in patients of group 3. It should be noted that in patients with CHF, when HbA1c of 6% and more and less than 6.5% showed an increase in the number of MS compared with that in patients with HbA1c is less than 6%; at the same time, MS III—V is diagnosed gradations. In group 2, an increase in the daily amount of extrasystoles was observed compared with that in patients of groups 1 and 3. In 11 patients of the 2nd group and 9 patients of the 1st group showed ischemic changes on the ECG. The number of episodes of ST segment depression and the total duration of ST segment depression. In patients of group 3, despite the significant frequency of detected supraventricular arrhythmias, the average daily number of extrasystoles was less than in patients of groups 1 and 3 (p < 0.05). At the same time, in patients with type 2 diabetes, an increase in the number of ventricular arrhythmias had a direct statistically significant correlation of medium strength with a diameter (r = 0.61; p < 0.05) and volume (r = 0.57; p < 0.05) of the left atrium. The relatively low sensitivity of daily ECG monitoring in our study can be explained by the fact that it was performed in a hospital in conditions of limited motor activity of patients.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

Thus, our data indicate that ventricular arrhythmias, to a greater extent degrees reflecting changes in intracardiac geometry and hemodynamics of the left ventricle were more often found in patients with CHF; in the presence of concomitant type 2 diabetes, combined (supraventricular and ventricular) rhythm disturbances are most often detected, the predominance of supraventricular rhythm disturbances was diagnosed in patients with type 2 diabetes.

CONCLUSIONS

The high frequency of hemodynamically and prognostically unfavorable arrhythmias in patients with chronic heart failure in combination with type 2 diabetes mellitus is due to both aggravation of myocardial insufficiency and pathogenetic factors associated with diabetes mellitus - dysglycemia, cardiovascular autonomic neuropathy, diabetic nephropathy.

LITERATURE

1. Ярмухамедова, С., Назаров, Ф., Махмудова, Х., Вафоева, Н., & Норматов, М. (2020). ДИАСТОЛИЧЕСКАЯ ФУНКЦИЯ ПРАВОГО ЖЕЛУДОЧКА У БОЛЬНЫХ С РАЗЛИЧНЫМИ СТАДИЯМИ ГИПЕРТОНИЧЕСКОЙ БОЛЕЗНИ ПРИ ПРИСОЕДИНЕНИИ СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТИ. In *Colloquium-journal* (No. 24-1, pp. 34-36). Голопристанський міськрайонний центр зайнятості= Голопристанский районный центр занятости.
2. Норматов, М. Б. (2023). ЭФФЕКТИВНОСТЬ АМЛОДИПИНА ПРИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ В СОЧЕТАНИИ С САХАРНЫМ ДИАБЕТОМ 2 ТИПА. *Journal of new century innovations*, *26*(1), 107-114.
3. Ярмухамедова, С. Х., Вафоева, Н. А., & Норматов, М. Б. (2020). Особенности клинической картины хронического пиелонефрита у женщин. *Молодой ученый*, (28), 65-67.
4. Yarmukhamedova, S., Nazarov, F., Mahmudova, X., Vafoeva, N., Bekmuradova, M., Gaffarov, X., ... & Xusainova, M. (2020). Features of diastolic dysfunction of the right ventricle in patients with hypertonic disease. *Journal of Advanced Medical and Dental Sciences Research*, *8*(9), 74-77.
5. Xaydarov, S. N., & Normatov, M. B. (2021). DETERMINATION OF IRON DEFICIENCY ANEMIA AT THE PREGNANCY PERIOD. *Scientific progress*, *2*(4), 325-327.
6. Yarmukhamedova, S., Nazarov, F., Mahmudova, X., Vafoeva, N., Bekmuradova, M., Gafarov, X., ... & Xusainova, M. (2020). Study of indicators of intracardial hemodynamics and structural state of the myocardium in monotherapy of patients with arterial hypertension with moxonidin. *Journal of Advanced Medical and Dental Sciences Research*, *8*(9), 78-81.
7. Норматов, М. Б. (2023). ДИАСТОЛИЧЕСКАЯ ДИСФУНКЦИЯ И РЕМОДЕЛИРОВАНИЕ ЛЕВОГО ЖЕЛУДОЧКА В ЗАВИСИМОСТИ ОТ КОНТРОЛЬНОЙ ГЛИКЕМИИ У ПАЦИЕНТОВ С САХАРНЫМ ДИАБЕТОМ 2 ТИПА. *Journal of new century innovations*, *26*(1), 99-106.
8. Норматов, М. (2020). ОЦЕНКА ПОКАЗАТЕЛЕЙ СУТОЧНОГО МОНИТОРИНГА АРТЕРИАЛЬНОГО ДАВЛЕНИЯ У БОЛЬНЫХ ХРОНИЧЕСКИМ ГЛОМЕРУЛОНЕФРИТОМ. *Журнал кардиореспираторных исследований*, *1*(1), 103-108.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

9. Ярмухамедова, С. Х., & Норматов, М. Б. (2020). Изучение особенностей суточного мониторирования артериального давления у больных хроническим гломерулонефритом. *Молодой ученый*, (38), 48-51.
10. Khabibovna, Y. S., & Buribaevich, N. M. (2020). Study Of Parameters Of Central Hemodynamics In Patients With Chronic Glomerulonephritis. *Достижения науки и образования*, (13 (67)), 57-59.
11. Habibovna, Y. S., & Bo'Riboyevich, N. M. (2020). Surunkali Glomerulonefrit Bilan Og 'Rigan Bemorlarda Arterial Qon Bosimining Sutkalik Monitoring Ko 'Rsatkichlarini Baxolash. *Journal of cardiorespiratory research*, *1*(1), 103-108.
12. Buribayevich, N. M. (2022). DIASTOLIC DYSFUNCTION AND REMODELING LEFT VENTRICLE DEPENDING ON THE CONTROL GLYCEMIA IN PATIENTS WITH TYPE 2 DIABETES MELLITUS. *Spectrum Journal of Innovation, Reforms and Development*, *7*, 96-100.
13. Buribayevich, N. M. (2022). Treatment of Chronic Heart Failure in Patients with Type 2 Diabetes Mellitus. *Central Asian Journal of Medical and Natural Science*, *3*(1), 183-186.
14. Buribayevich, N. M. (2022). Index of Functional Changes in the Assessment Adaptive State of Comorbid Patients Treated with Trimetazidine. *Czech Journal of Multidisciplinary Innovations*, *10*, 42-48.
15. Buribayevich, N. M. (2022). FEATURES OF MANAGEMENT OF PATIENTS WITH CHRONIC HEART FAILURE AND DIABETES MELLITUS. *Spectrum Journal of Innovation, Reforms and Development*, *10*, 263-269.
16. Uzokov, J. B., Khusainova, M. A., Eshmamatova, F. B., & Mamadiyorova, M. M. (2023). Correction of violations rheology of blood in ischemic heart disease. *Science and Education*, *4*(2), 153-159.
17. Khaydarov, S. N., Khusainova, M. A., Uzokov, J. B., & Makhmudova, K. D. (2023). Heart failure and the risk of hypoglycemia. *Science and Education*, *4*(5), 222-231.
18. Khusainova, M. A., Khaydarov, S. N., Uzokov, J. B., & Karabayeva, G. K. (2023). KIDNEY CONDITION IN PATIENTS WITH CHRONIC HEART FAILURE. *Oriental renaissance: Innovative, educational, natural and social sciences*, *3*(2), 102-112.
19. Uzokov, J. B., Khusainova, M. A., Bekmuradova, M. S., & Makhmudova, K. D. (2023). Dynamics of quality of life indicators during personalized rehabilitation of patients with rheumatoid arthritis with arterial hypertension. *Science and Education*, *4*(5), 196-204.
20. Khusainova, M. A., Bekmuradova, M. S., Makhmudova, K. D., & Uzokov, J. B. (2023). Echocardiographic changes of the left ventricle in bronchial asthma. *Science and Education*, *4*(5), 214-221.
21. Khusainova, M. A., Khaydarov, S. N., Uzokov, J. B., & Shonazarova, N. K. (2023). QUALITY OF LIFE IN PATIENTS WITH CHOLELITHIASIS IN THE LONG-TERM PERIOD AFTER CHOLECYSTECTOMY. *Oriental renaissance: Innovative, educational, natural and social sciences*, *3*(2), 231-239.
22. Khusainova, M. A., Gafforov, K. K., Uzokov, J. B., & Tairova, Z. K. (2023). THE CHANGE IN THE QT INTERVAL IS A MARKER OF THE SEVERITY OF LIVER CIRRHOSIS. *Oriental renaissance: Innovative, educational, natural and social sciences*, *3*(2), 94-101.
23. Rustamovich, T. D., Alisherovna, K. M., Baxtiyorovich, U. J., & Abdurakhmonovich, M. M. (2022). Painless Cardiac Ischemia in Women with Rheumatoid Arthritis. *Texas Journal of Medical Science*, *13*, 95-98.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

24. Alisherovna, K. M., Rustamovich, T. D., Baxtiyorovich, U. J., & Sobirovna, S. M. (2022). Diabetes Mellitus and Hyperglycemia in Patients with Rheumatoid Arthritis. *Texas Journal of Medical Science*, *13*, 99-103.
25. Alisherovna, K. M., Rustamovich, T. D., & Baxtiyorovich, U. J. (2022). The Use of Trimetazidine in Patients with Type 2 Diabetes Mellitus Who Have Suffered a Myocardial Infarction. *Czech Journal of Multidisciplinary Innovations*, *10*, 35-41.
26. Khabibovna, Y. S., Alisherovna, K. M., Tashtemirovna, E. M. M., & Baxtiyorovich, U. J. (2023). THE EFFECTIVENESS OF THYROSTATICS IN THE TREATMENT OF. *Journal of new century innovations*, *29*(1), 79-88.
27. Alisherovna, K. M., Akramovna, I. K., Bakhtiyorovich, U. J., Nizamitdinovich, K. S., Jasurovna, J. S., Kairatovna, R. A., & Abdukholikovna, E. S. (2023). Exacerbations of chronic obstructive pulmonary disease and coronary atherosclerosis. *Journal of new century innovations*, *39*(1), 176-178.
28. Alisherovna, K. M., Khabibovna, Y. S., Nizamitdinovich, K. S., & Bakhtiyorovich, U. J. (2023). CYSTATIN and KIDNEY FUNCTION. *Journal of new century innovations*, *38*(2), 220-225.
29. Khabibovna, Y. S., Alisherovna, K. M., Tashtemirovna, E. M. M., Totlibayevich, Y. S., Nizamitdinovich, K. S., & Baxtiyorovich, U. J. (2023). DIAGNOSTIC VALUE OF CYSTATIN C IN PATIENTS WITH HYPERTENSION AND OBESITY. *World Bulletin of Public Health*, *22*, 55-59.
30. Baxtiyorovich, U. J., Alisherovna, K. M., & Mamasoliyevna, D. N. (2023). Features of cognitive impairment in patients with chronic kidney disease at predialysis stages. *World Bulletin of Public Health*, *22*, 49-54.
31. Erkinovna, K. Z., Alisherovna, K. M., Bakhtiyorovich, U. J., & Djamshedovna, K. D. (2023). METABOLIC SYNDROME IN RHEUMATOID ARTHRITIS. *Journal of new century innovations*, *38*(2), 203-211.
32. Bakhtiyorovich, U. J. (2024). METABOLISM REGULATOR IN PATIENTS WITH CHRONIC HEART FAILURE AND ANEMIA OF CHRONIC DISEASES. *Journal of new century innovations*, *45*(3), 3-12.
33. Bakhtiyorovich, U. J. (2024). FEATURES OF THE COGNITIVE STATUS IN WOMEN WITH IRON DEFICIENCY ANEMIA. *Spectrum Journal of Innovation, Reforms and Development*, *24*, 27-32.
34. Alisherovna, K. M., Ismatullayevich, M. A., & Nuriddinovna, E. N. (2024). FEATURES OF HEART FAILURE IN PATIENTS WITH CORONARY HEART DISEASE AND THYROTOXICOSIS. *Ta'lim innovatsiyasi va integratsiyasi*, *19*(4), 52-61.
35. Alisherovna, K. M., Habibulloyevna, I. M., & Voxidovna, R. F. (2024). STRUCTURAL AND FUNCTIONAL FEATURES OF THE LEFT VENTRICLE IN PATIENTS WITH HEART FAILUREIN ISCHEMIC HEART DISEASE AND THYROTOXICOSIS. *Ta'lim innovatsiyasi va integratsiyasi*, *19*(4), 71-81.
36. Alisherovna, K. M., Erkinovna, S. D., Yazdonkulovna, X. M., & Zafarovna, C. M. M. (2024). ATRIAL FIBRILLATION IN THYROTOXICOSIS–DETERMINANTS OF DEVELOPMENT AND CONSERVATION. *Ta'lim innovatsiyasi va integratsiyasi*, *19*(4), 103-113.
37. Alisherovna, K. M., Yaxshiboyevich, U. M. R., & Yigitaliyevich, B. A. (2024). EVALUATION OF A NATRIURETIC PEPTIDE TO OPTIMIZE THE MANAGEMENT OF COMORBID PATIENTS WITH THYROTOXICOSIS AND HEART FAILURE. *Ta'lim innovatsiyasi va integratsiyasi*, *19*(4), 62-70.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

38. Alisherovna, K. M., Erkinovna, S. D., Duskobilovich, B. S., & Samandarovich, T. H. (2024). ARTERIAL HYPERTENSION IN THYROTOXICOSIS AND REMODELING OF THE LEFT VENTRICLE OF THE HEART. *Ta'lim innovatsiyasi va integratsiyasi*, *19*(4), 114-121.
39. Alisherovna, K. M., Akramovna, I. K., & Yorkinovna, E. N. (2024). CLINICAL AND MORPHOLOGICAL CRITERIA OF COLITIS IN PATIENTS WITH CHRONIC ISCHEMIC DISEASE OF THE DIGESTIVE SYSTEM. *Ta'lim innovatsiyasi va integratsiyasi*, *18*(6), 6-13.
40. Alisherovna, K. M., Akramovna, I. K., & Baxtiyorovna, O. K. (2024). THE COURSE OF CHRONIC ISCHEMIC PANCREATITIS IN PATIENTS WITH CORONARY HEART DISEASE. *Ta'lim innovatsiyasi va integratsiyasi*, *18*(5), 231-239.
41. Alisherovna, K. M., Akramovna, I. K., & Kairatovna, R. A. (2024). THE EFFECTIVENESS OF TREATMENT OF PATIENTS WITH OSTEOARTHRITIS WITH CARDIOVASCULAR DISORDERS IN METABOLIC SYNDROME. *Ta'lim innovatsiyasi va integratsiyasi*, *18*(5), 223-230.
42. Alisherovna, K. M., Davranovna, M. K., & Erkinovna, K. Z. (2024). CORONARY HEART DISEASE AND OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN. *Spectrum Journal of Innovation, Reforms and Development*, *26*, 40-45.
43. Alisherovna, K. M., Mansurovna, M. D., Erkinovna, N. D., Farxodovna, X. R., Toxirovna, M. M., Tolibovna, R. D., & Yorkinovna, E. N. (2024). ARTERIAL HYPERTENSION AND THYROID STATUS IN PATIENTS OF DIFFERENT AGES. *Ta'lim innovatsiyasi va integratsiyasi*, *19*(4), 122-129.
44. Davranovna, M. K. D. K., Alisherovna, K. M., & Erkinovna, K. Z. (2024). CARDIAC ARRHYTHMIAS IN PATIENTS WITH RHEUMATOID ARTHRITIS. *Spectrum Journal of Innovation, Reforms and Development*, *26*, 65-71.
45. Erkinovna, K. Z., Alisherovna, K. M., & Davranovna, M. K. (2024). ARTERIAL HYPERTENSION AND ARRHYTHMIA. *Spectrum Journal of Innovation, Reforms and Development*, *26*, 72-78.
46. Nizamitdinovich, K. S., Alisherovna, K. M., & Erkinovna, K. Z. (2024). ASSESSMENT OF THE RISK OF DEVELOPING DIABETES MELLITUS FOR MEN. *Spectrum Journal of Innovation, Reforms and Development*, *26*, 114-123.
47. Khabibovna, Y. S., & Alisherovna, K. M. (2024). STRESS TESTING IN PATIENTS WITH CORONARY HEART DISEASE. *Journal of new century innovations*, *45*(3), 28-33.
48. Alisherovna, K. M., Nizamitdinovich, K. S., & Erkinovna, K. Z. (2024). THE EFFECTIVENESS OF BISOPROLOL AND METFORMIN IN ARTERIAL HYPERTENSION AND METABOLIC SYNDROME. *Spectrum Journal of Innovation, Reforms and Development*, *26*, 106-113.
49. Akramovna, I. K., & Alisherovna, K. M. (2024). CAUSES OF ARRHYTHMIA DURING PREGNANCY. *Journal of new century innovations*, *45*(3), 34-41.
50. Khabibovna, Y. S., & Xudoyberdiyevich, G. X. (2024). THE POSSIBILITIES OF COENZYME Q10 AS PART OF THE COMPLEX THERAPY OF PATIENTS WITH CHRONIC HEART FAILURE. *Spectrum Journal of Innovation, Reforms and Development*, *25*, 116-123.
51. Yarmukhamedova, S. K., & Gafforov, X. X. (2024). Indicators of daily blood pressure monitoring in patients with osteoarthritis with cardiovascular disorders in case of metabolic syndrome. *Science and Education*, *5*(4), 50-55.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

52. Khabibovna, Y. S., Alisherovna, K. M., Nizamitdinovich, K. S., & Totlibayevich, Y. S. (2023). Features of heart failure in patients with thyrotoxicosis. *Journal of new century innovations*, *29*(1), 89-97.
53. Khabibovna, Y. S., Alisherovna, K. M., Tashtemirovna, E. M. M., Nizamitdinovich, K. S., & Abdukadirovna, A. S. (2023). ANTITHROMBOTIC THERAPY IN CARDIOLOGICAL PATIENTS. *Journal of new century innovations*, *39*(1), 169-171.
54. Khabibovna, Y. S., Alisherovna, K. M., Totlibayevich, Y. S., & Davranovna, M. K. (2023). PAINLESS CARDIAC ISCHEMIA AND RHEUMATOID ARTHRIT. *Journal of new century innovations*, *29*(1), 98-105.
55. Khabibovna, Y. S., Alisherovna, K. M., Nizamitdinovich, K. S., Tashtemirovna, E. M. M., Abdukadirovna, A. S., & Jasurovna, J. S. (2023). DEPRESSION, ANXIETY AND QUALITY OF LIFE IN PATIENTS WITH ATRIAL FIBRILLATION. *Journal of new century innovations*, *39*(1), 185-189.
56. Nizamitdinovich, K. S., Khabibovna, Y. S., Alisherovna, K. M., & Tashtemirovna, E. M. M. (2023). Spinal Injury for Rheumatoid Arthritis. *Miasto Przyszłości*, *40*, 426-432.
57. Khabibovna, Y. S., Alisherovna, K. M., Erkinovna, K. Z., & Djamshedovna, K. D. (2023). Gender Characteristics of the Course of Rheumatoid Arthritis. *Miasto Przyszłości*, *40*, 438-442.