ST-elevation myocardial infarction in patients with type 2 diabetes mellitus.
Influence of the SGLT2 inhibitor dapagliflozin

Abstract. Background. Patients with type 2 diabetes mellitus (T2DM) have a 2-fold higher risk of developing coronary heart disease and mortality than those without carbohydrate metabolism disturbances. The reason for such negative trends is the occurrence of metabolic stress due to hyperglycemia and insulin resistance, which causes disturbance in energy metabolism and ischemic damage to cardiomyocytes. The purpose of the study is to improve the effectiveness of rehabilitation treatment and assess the dynamics of quality of life in patients with ST-elevation myocardial infarction (STEMI) and T2DM who are at high risk of developing cardiac complications during the inpatient treatment by including the sodium-glucose transport protein 2 (SGLT2) inhibitor dapagliflozin in the comprehensive therapy. Materials and methods. The study group consisted of 38 patients with STEMI and T2DM who received dapagliflozin in addition to percutaneous coronary intervention (PCI). The control group included 37 patients with STEMI and T2DM who received only standard protocol treatment after PCI. In addition to general clinical examinations and assessment of quality of life using the EuroQol Group EQ-5D-5L questionnaire (1990), echocardiography was performed to determine general and local myocardial contractility by the Simpson method; plasma levels of glucose, insulin were evaluated, and insulin resistance was determined by the HOMA-IR. Results. Patients with STEMI and T2DM after PCI most often developed reperfusion syndrome with left ventricular failure and rhythm disturbances. Under the influence of standard medical treatment, a significant clinical and functional improvement was observed, but postinfarction remodeling progressed with impaired systolic and diastolic function and the development of heart failure syndrome, as well as treatment-resistant atrial and ventricular fibrillation paroxysms, supraventricular and ventricular extrasystoles, and bundle branch block. In patients of the study group with STEMI and T2DM on the comprehensive treatment with the SGLT2 inhibitor dapagliflozin, a significant decrease in the frequency of rhythm and conduction disturbances was noted on the second day of observation, as well as a decrease in postinfarction left ventricular remodeling, which ultimately manifested in a statistically significant improvement of myocardial contractility (ejection fraction increased by 6.7 %) and a decrease in diastolic dysfunction. There was also a significant decrease in the frequency and severity of reperfusion arrhythmias, which was achieved due to the cardiometabolic effect of the SGLT2 inhibitor dapagliflozin. Conclusions. The inclusion of the SGLT2 inhibitor dapagliflozin in the comprehensive treatment led to a significant improvement in central cardiac hemodynamic parameters and a decrease in the frequency and severity of reperfusion arrhythmias and acute left ventricular failure, which contributed to the improvement in quality of life.

Keywords: type 2 diabetes mellitus; ST-elevation myocardial infarction; percutaneous coronary intervention; dapagliflozin; quality of life
Introduction
Cardiovascular diseases (CVD), especially acute forms of coronary heart disease (CHD) such as acute coronary syndrome (ACS), are the main causes of morbidity, disability and mortality worldwide and in Ukraine [1, 2]. Thus, according to the Global Burden of Disease study, about 17.8 million people die from CVD annually, and more than 3.87 million in Europe. At the same time, the highest mortality rates are recorded in the Eastern European countries [3]. Particularly, in Ukraine in 2021 mortality due to CVD was 64.2%, while in the economically developed countries this number is 40–45% [4].

The risk of complications and death in CHD increases with the number of risk factors and comorbidities. Such significant risk factor for ACS with ST-elevation myocardial infarction (STEMI) is type 2 diabetes mellitus (T2DM), which has become a global health problem due to a significant increase in prevalence [5]. It has also been proven that T2DM has common risk factors and progression with STEMI, such as unhealthy diet, lipid metabolism disturbance, hyperglycemia and insulin resistance (IR), obesity, hypertension, and physical inactivity [6, 7]. According to the results of the international EpiDREAM randomized controlled trial, a 1 mmol/l increase in glucose levels is associated with a 17% increase in the risk of cardiovascular events or death [8]. It should be noted that patients with T2DM have a 2-fold increased risk of developing CHD, and the risk of mortality is 2–4 times higher compared to patients without carbohydrate metabolism disorders [9]. Diabetes is a risk factor for CVD, regardless of age, hypertension, body weight, and type of hyperlipidemia [10, 11], and in 2019, about 4.2 million deaths related to diabetes were reported worldwide [12, 13].

The main reason for such negative trends in T2DM is the development of metabolic stress due to hyperglycemia and IR, which causes disturbance in energy metabolism and ischemic damage to cardiomyocytes. This pathogenetic mechanism of STEMI suggests the possibility of a drug effect on these pathological processes. It is believed that glycemia control can affect the clinical and angiographic results of myocardial revascularization in patients with STEMI and T2DM. Thus, a number of clinical trials has shown the connection of perioperative hyperglycemia and increased risk of cardiovascular complications of myocardial revascularization [14, 15]. Therefore, when choosing a hypoglycemic drug in patients with coronary artery disease, the requirements are met according to which it should not only normalize glycemia but also improve the prognosis for cardiovascular complications.

In recent years, studies have shown a fairly high clinical efficacy of the sodium-glucose transport protein 2 (SGLT2) inhibitors in patients with T2DM. In the DAPA-HF randomized controlled trial, dapagliflozin administration in patients with CHD and reduced ejection fraction resulted in a 18% decrease in the risk of cardiovascular mortality and a 30% decrease in hospital admissions for CHD [16]. Nowadays, dapagliflozin is the only SGLT2 inhibitor recommended for use in patients with CHD with reduced ejection fraction even in the absence of DM [17].

The purpose of the study is to improve the effectiveness of treatment in recovery period and assess the dynamics of quality of life in patients with ACS (STEMI) and T2DM who are at high risk of developing cardiac complications during the inpatient care by including the SGLT2 inhibitor dapagliflozin in the comprehensive therapy.

Materials and methods
The open-label, controlled, comparative study was conducted in parallel groups. Seventy-five patients with acute coronary syndrome with ST-segment elevation and T2DM were examined and underwent urgent balloon angioplasty and stenting of the infarction-dependent coronary artery and were treated at the cardiology department of Ternopil University Hospital in 2021–2023. Participants aged 38 to 75 years, on average 56.38 ± 6.41 years, were selected; men predominated among the study population (82.7%). The diagnosis of STEMI was verified according to the ESC (2018) guidelines, and T2DM — according to the ADA and IDF (2010). Depending on the treatment program used, patients were divided into two groups.

The study group (group 1) consisted of 38 individuals who received standard protocol treatment for STEMI according to the Unified Clinical Protocol and the Adapted Clinical Practice Guideline [18, 19] and were additionally prescribed the SGLT2 inhibitor dapagliflozin at a dose of 10 mg/day. The control group (group 2) included 37 patients with STEMI who also underwent urgent balloon angioplasty and stenting of the infarction-dependent coronary artery but received only standard protocol treatment.

In addition to general clinical, laboratory and instrumental methods (complete blood count, basic and comprehensive metabolic panel, lipid panel, coagulation panel, creatine phosphokinase-MB, troponin T, arterial blood oxygen saturation), all patients were tested for plasma level of glucose and HbA1c (by glucose oxidase method using a Bisensline analyzer (Germany)), insulin (by chemiluminescence with the help of Access analyzer (USA)) and IR by HOMA-IR index. The standard 12-lead electrocardiography with monitoring of rhythm and conduction disturbances was performed and intracardiac hemodynamics was assessed by transthoracic echocardiography (Canon Apio 400 with sectoral transducer in M-, B- and Doppler modes. Additionally, all patients were interviewed using the EQ-5D-5L questionnaire proposed by the international interdisciplinary team of scientists, EuroQol Group (1990) [20, 21]. The scale measures quality of life on a 5-component scale including mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each level is rated on scale that describes the subjective severity of symptom in each area (i.e. I have no problems in walking about, slight, moderate or severe problems, unable to walk). This tool also has an overall health scale where the patient selects a number from 1 to 100 to describe the condition of their health, where 100 is the best imaginable state of health.

These examinations were performed upon admission and repeated immediately after the intervention and on day 10.

Statistical analysis of the indicators was carried out using the method of variation statistics. Samples were checked for normality of data distribution using the Shapiro-Wilk test,
and parametric (T-test, Student’s t-test) or nonparametric (Mann-Whitney U-test) methods were applied. The correlation coefficient (r) and the Pearson’s correlation test were used to assess the relationship between the features.

Results

Before the treatment, most patients in the study and the control group had a common painful course of ACS with typical changes in the electrocardiographic curve and the presence of necroresorptive syndrome. However, a significant part of patients with ACS and T2DM (21.3 %) was diagnosed with an atypical clinical onset of myocardial infarction, whereas in the control group, this type of myocardial infarction was diagnosed in only 10.7 % of cases (p < 0.05). Severe generalized weakness was present in 84.0 % of patients in the study group and in 32.1 % of controls, 35 % of participants in both groups reported chest discomfort, shortness of breath and a feeling of lack of air. Nausea, vomiting, and dizziness were observed in 32.0 and 10.7 % of patients in the respective groups. It should also be noted that throughout the comprehensive and standard therapy, the angina syndrome was eliminated within the first day of treatment in all patients of both groups. However, residual symptoms in the form of general weakness, chest discomfort, etc. were observed in 36.0 % of patients of the study group and 53.6 % of controls during the first day.

It is important to note that patients with comorbidities had significantly higher rates of IR, especially those who were overweight and obese. Thus, in patients with STEMI and T2DM with normal body weight, the HOMA-IR was 8.1 (6.8–12.5), and in overweight individuals, 14.1 (13.6–17.2). The obtained results substantiated the need to normalize hyperglycemia and IR in patients with comorbidities by additional administration of the SGLT2 inhibitor dapagliflozin at a dose of 10 mg/day. After the treatment, HOMA-IR in the study group decreased by 1.62 times in patients with normal body weight, by 1.73 times in overweight and by 1.94 times in obese participants. The addition of dapagliflozin to the comprehensive treatment also had a statistically significant effect on blood insulin levels. Comparing to the standard therapy, insulin content in patients with STEMI and T2DM decreased by 38.25 % (p < 0.05).

In a more detailed analysis of cardiac rhythm and conduction disorders, which were diagnosed in 73 (97.3 %) of the examined patients with comorbidities, ventricular or supraventricular extrasystoles (92.0 %), atrial fibrillation paroxysms (16.0 %), ventricular tachycardia (10.7 %), and blocks of different degrees and localization (49.3 %) were most often recorded.

Under the influence of standard and comprehensive treatment, patients of both groups showed a positive trend in the frequency of rhythm and conduction disturbances but significantly higher number of rhythm disturbances after 1–5 days of treatment continued to be observed in controls. It should be noted that patients of this group significantly more often developed reperfusion syndrome in the form of various rhythm disturbances and acute heart failure (31.6 vs. 14.3 % in the study group, p < 0.05). Thus, in the control group on standard treatment, the long/short QT syndrome was diagnosed almost 3 times more often (25.0 % of cases vs 8.6 % in the comprehensive therapy group), which most researchers associate with a high incidence of life-threatening ventricular arrhythmias. With standard treatment, ventricular tachycardias developed 3 times more often, ventricular fibrillation and atrioventricular block were 2.5 times more frequent than in patients treated with the SGLT2 inhibitor. In general, the number of complications in the early reperfusion period was 2.9 times lower in patients of the study group on the comprehensive treatment than in the control group on standard therapy.

The electrocardiography findings (Table 1) before treatment in patients with STEMI from the study and control groups did not differ statistically but were significantly different from those in healthy people (reference values). It should be noted that before treatment, patients with STEMI were diagnosed with systolic and diastolic dysfunction of the left ventricle (LV), as evidenced by an increase in left ventricular end-systolic pressure (LV ESP), left ventricular end-diastolic pressure (LV EDP), A-wave (A), isovolumic relaxation time (IVRT), deceleration time (DT), and a decrease in ejection fraction (EF), E-wave (E), E/A ratio. The left ventricular contractile function (as measured by ejection fraction) decreased by an average of 16 % due to STEMI.

Under the influence of standard therapy, for up to 10 days in patients with STEMI, the values of LV EDP, IVRT, DT, A decreased and such intracardiac hemodynamic parameters as E, E/A ratio, EF increased significantly. Thus, on day 10 in patients with STEMI of the control group, there was a cardiac remodeling with a gradual increase in chamber volumes and a decrease in contractility. At the same time, patients developed diastolic dysfunction mainly of the relaxation type. Therefore, after a course of standard treatment, patients in this group continued to experience postinfarction LV remodeling, which manifested in a significant increase in LV EDP, IVRT, DT and a decrease in E, E/A ratio. LV EF slightly increased (by 1.5–2.3 %) compared to the pretreatment value (p > 0.05). However, this indicator after treatment was significantly lower than in healthy individuals. The data obtained demonstrate insufficient hemodynamic efficacy of standard therapy in these participants.

In patients with STEMI of the study group who underwent comprehensive treatment with dapagliflozin, a significant increase in DT and EF and a decrease in LV EDP and E/A ratio were noted at the examination on day 10, the changes in other hemodynamic parameters were less significant compared to the pretreatment values but there was a clear downward trend in postinfarction cardiac remodeling. At the same time, the development of diastolic dysfunction of the relaxation type was noted. Thus, after the applied comprehensive therapy, IVRT and EF significantly increased and E, A, E/A ratio decreased compared to the pretreatment value. Thus, the addition of the SGLT2 inhibitor to the standard medical treatment in these patients contributed to a decrease in the size of the left heart chambers and manifestations of postinfarction LV remodeling. The latter one is confirmed by a statistically significant increase in EF (by an average of 6.7 %), myocardial contractility and a decrease in diastolic dysfunction.
In order to objectively assess the effectiveness of the proposed comprehensive treatment and its subjective perception by patients, we evaluated the dynamics of their quality of life using the standardized EQ-5D-5L questionnaire.

Before treatment, patients of both groups rated their quality of life with a relatively low score, on average 26.72 ± 10.41 and 27.18 ± 10.22 units (Table 2). Therefore, from the obtained results it can be concluded that participants have a relatively low quality of life, which indicates the homogeneity of the groups, and no statistically significant difference between them before treatment was observed (p > 0.05).

When assessing the dynamics of quality of life during the standard treatment in patients with STEMI and T2DM, a significant improvement in health was observed, quality of life index in general increased by 66.60 %. At the same time, in patients who received comprehensive treatment (with the additional SGLT2 inhibitor dapagliflozin), quality of life improved by an average of 230.5 %, which is significantly higher compared to the control group who received standard treatment (p < 0.05).

When analyzing the separate components of the EQ 5D-5L questionnaire, a special attention was paid to the assessment of patients’ physical activity, pain/discomfort, and anxiety/depression. High quality of life (according to the criterion “I have no problems”) in all three categories was mentioned only in patients with STEMI and T2DM who were additionally treated with dapagliflozin. The best results were obtained from patients’ assessment of pain/discomfort (odds ratio (OR) = 0.43 [95% confidence interval (CI) 0.26–0.74; p < 0.05]) and anxiety/depression (OR = 0.54 [95% CI 0.32–0.84; p < 0.05]). Significantly lower rates of physical activity in patients of this group (OR = 0.76 [95% CI 0.62–1.06; p < 0.05]) can be explained by limitations of their physical rehabilitation protocol at this treatment stage.

At the same time, in patients with comorbidities who presented with STEMI and T2DM, the use of standard treatment was accompanied by a significant regression of pain (OR = 0.62 [95% CI 0.46–0.84; p < 0.05]) and some improvement in motor activity (OR = 0.78 [95% CI 0.58–

<table>
<thead>
<tr>
<th>Parameters and their reference values</th>
<th>Groups</th>
<th>Day 1</th>
<th>Day 10</th>
<th>p1</th>
<th>p2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV EDP, ml (147.9 ± 1.4)</td>
<td>1</td>
<td>161.5 ± 1.2</td>
<td>194.3 ± 1.4</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>162.1 ± 1.4</td>
<td>154.8 ± 1.6</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>LV ESP, ml (81.3 ± 3.8)</td>
<td>1</td>
<td>98.6 ± 2.7</td>
<td>85.5 ± 3.2</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>99.3 ± 2.3</td>
<td>92.4 ± 2.5</td>
<td>&gt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>EF, % (61.8 ± 0.3)</td>
<td>1</td>
<td>46.7 ± 0.4</td>
<td>53.2 ± 0.2</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>47.6 ± 0.4</td>
<td>48.7 ± 0.3</td>
<td>&gt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>IVRT, ms (88.5 ± 2.1)</td>
<td>1</td>
<td>81.9 ± 1.3</td>
<td>71.3 ± 1.3</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>80.8 ± 2.1</td>
<td>78.4 ± 1.5</td>
<td>&gt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>DT, ms (196.4 ± 4.7)</td>
<td>1</td>
<td>169.9 ± 5.3</td>
<td>215.4 ± 5.2</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>167.5 ± 4.4</td>
<td>176.6 ± 4.6</td>
<td>&gt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>E, cm/s (45.67 ± 1.70)</td>
<td>1</td>
<td>51.5 ± 1.8</td>
<td>53.2 ± 1.8</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>62.2 ± 1.3</td>
<td>66.4 ± 1.3</td>
<td>&gt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>A, cm/s (36.8 ± 1.1)</td>
<td>1</td>
<td>44.3 ± 1.3</td>
<td>37.2 ± 1.2</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>42.7 ± 1.1</td>
<td>48.5 ± 1.2</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>E/A ratio (1.23 ± 0.04)</td>
<td>1</td>
<td>1.39 ± 0.04</td>
<td>1.10 ± 0.04</td>
<td>&lt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.46 ± 0.05</td>
<td>1.37 ± 0.06</td>
<td>&gt; 0.05</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

Notes: p1 — the statistical significance of the difference between patients with STEMI on days 1 and 10 of treatment; p2 — the statistical significance of the difference between the parameter on day 10 and the reference value; parameters given in bold are significantly different from those of controls.

Table 2. The effect of the comprehensive treatment on the dynamics of quality of life in patients with STEMI and T2DM (M ± m)

<table>
<thead>
<tr>
<th>Stage of treatment</th>
<th>Group 1 (n = 38)</th>
<th>Group 2 (n = 37)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon admission, units</td>
<td>26.72 ± 10.41</td>
<td>27.18 ± 10.22</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Before discharge, units</td>
<td>88.32 ± 9.52</td>
<td>45.28 ± 9.26</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Growth during treatment, %</td>
<td>+230.54</td>
<td>+66.60</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

Notes: parameter given in bold is significantly different from the pretreatment data; p — statistical significance of the difference before and after treatment.
0.92; p < 0.05]), but their severe general clinical condition contributed to increased signs of anxiety and depressive behavior at the end of inpatient treatment (OR = 0.86 [95% CI 0.66–1.17; p < 0.05]).

Therefore, the analysis of the dynamics of quality of life under the influence of the comprehensive and standard treatment indicates their subjective effectiveness in both groups. However, the standard program was not effective enough in patients with comorbidities who presented with STEMI and T2DM, and only the additional use of dapagliflozin contributed to a statistically significant improvement in quality of life (by 3.3 times) in the study group.

Discussion

Summing up the results, it should be noted that the use of the comprehensive therapy with the inclusion of the SGLT2 inhibitor dapagliflozin in patients with STEMI and T2DM contributed to a pronounced positive dynamic of clinical manifestations of not only the underlying disease but also metabolic disturbances. In addition, under the influence of the comprehensive treatment with the inclusion of the SGLT2, patients showed a significant decrease in the frequency of rhythm and conduction disturbances, by 65% on the second day of observation, and by 8–10 days of treatment, a significant decrease in such rhythm disturbances as sinus tachycardia and supraventricular extrasystole was observed.

It should also be noted that hyperglycemia and IR, which are manifested in T2DM and leads to glycosylation of proteins and other substrates, are considered to be additional causes of metabolic disturbances in patients with comorbidities, accompanied by a 40% increase in the risk of CHD, a 16% in cardiovascular events, and a 26% in the risk of overall mortality, regardless of the presence of other risk factors [22, 23]. Taking into account current recommendations on the choice of a hypoglycemic drug that should not only normalize glycemia but also improve cardiovascular prognosis, we used the SGLT2 inhibitor dapagliflozin, which, according to the DAPA-HF randomized controlled trial, led to an 18% reduction in the risk of cardiovascular mortality and a 30% reduction in hospital admissions for heart failure [16, 24]. The results of our study demonstrated high clinical efficacy of dapagliflozin in patients with STEMI and T2DM in terms of glycemic control, reduction of insulin resistance and an increase in myocardial contractility (EF elevated by 6.7 ± 0.4 %).

In addition, the obtained results allow us to conclude that clinical manifestations, physical and functional changes in the body associated with health significantly affect quality of life, which is one of the most important criteria for assessing the severity of the condition, the need for revascularization interventions and the use of additional medical treatment in comorbid patients with myocardial infarction and T2DM [25, 26]. The potential ability to improve quality of life in such patients with clinical, laboratory and instrumental signs of treatment effectiveness, in particular the use of revascularization interventions and metabolic therapy, suggests the need of including dapagliflozin in a comprehensive treatment program for patients with acute clinical forms of coronary artery disease in combination with T2DM.

Conclusions

In patients with STEMI on the background of T2DM, a significantly frequent atypical course of myocardial infarction was observed before treatment. It was accompanied by high levels of glycated hemoglobin and insulin resistance, severe disorders of morphological and functional parameters of the heart, and postinfarction remodeling with impaired systolic and diastolic function. After percutaneous coronary intervention with the standard medical therapy, reperfusion syndrome in the form of rhythm and conduction disturbances and acute forms of heart failure was diagnosed more often.

The use of the comprehensive treatment with the additional SGLT2 inhibitor dapagliflozin led to a significant reduction in the HOMA-IR and a significant improvement in central cardiovascular hemodynamics, which was accompanied by a significant (p < 0.05) decrease in the incidence and severity of ACS complications such as reperfusion arrhythmias and an increase in myocardial contractility (EF elevated by 6.7 ± 0.4 %).

In patients with STEMI and T2DM who received additional dapagliflozin, the best results obtained in terms of self-assessment of their quality of life were the reduction of pain/discomfort (OR = 0.43 [95% CI 0.26–0.74; p < 0.05]), anxiety/depression (OR = 0.54 [95% CI 0.32–0.84; p < 0.05]) and slightly lower — for physical activity (OR = 0.76 [95% CI 0.62–1.06; p < 0.05]). The use of standard treatment in this category of patients with comorbidities was accompanied by a significant regression of quality of life parameters, but their severe general clinical condition contributed to increased signs of anxiety and depressive behavior (OR = 0.86 [95% CI 0.66–1.17; p < 0.05]).

References


Гострий інфаркт міокарда з елевацією сегмента ST у хворих на цукровий діабет 2-го типу.
Вплив інгібітора НЗКГ-2 дапагліфлозину

Резюме. Актуальність. У пацієнтів зі цукровим діабетом (ЦД) 2-го типу вдвічі вищий ризик розвитку ішемічної хвороби серця та смертності від неї, ніж в осіб без порушень углеводного обміну. Причиною таких негативних тенденцій вважають розвиток метаболічного стресу в умовах гіперглікемії та інсулинорезистентності, які лежать в основі порушення енергетичного метаболізму й ішемічного пошкодження кардіоміоцитів.

Мета роботи: підвищити ефективність відновного лікування та оцінити динаміку показників якості життя у хворих із гострим коронарним синдромом (інфаркт міокарда з елевацією сегмента ST (STEMI)) на тлі ЦД 2-го типу та високим ризиком розвитку кардіальних ускладнень на стаціонарному етапі лікування шляхом включення в комплексну терапію інгібітора натрійзалежного котранспортера глюкози 2-го типу (НЗКГ-2) дапагліфлозину.

Матеріали та методи. Дослідну групу становили 38 хворих зі STEMI та ЦД 2-го типу, яким після черезшкірного коронарного втручання (ЧКВ) додатково призначали інгібітор НЗКГ-2 дапагліфлозин. У контрольну групу увійшли 37 пацієнтів зі STEMI й ЦД 2-го типу, які після ЧКВ отримували лише стандартне протокольне лікування.

Результати. У хворих зі STEMI на тлі ЦД 2-го типу після коронарного втручання найчастіше розвивався реперфузійний синдром з проявами лівошлуночкової недостатності та порушення ритму. Під впливом стандартного медикаментозного лікування відзначалося суттєве клініко-функціональне покращення, але прогресувало післяінфарктне ремоделювання з порушенням систолічної та діастолічної функції і розвитком синдрому серцевої недостатності, також зберігалися резистентні до лікування пароксизмі фібриляції передсердь, шлуночків, суправентрикулярні та шлуночкові екстрасистоли і блокади ніжок пучка Гіса. У хворих дослідної групи зі STEMI й ЦД 2-го типу на тлі комплексного медикаментозного лікування з включеним інгібітора НЗКГ-2 дапагліфлозину відзначалась вірогідне зниження частоти порушень ритму і провідності вже на другу добу спостереження, а також зменшення ознак післяінфарктного ремоделювання лівого шлуночка, що в результаті привело до вірогідного зниження частоти і вираженості реперфузійних аритмій (фракція викиду зросла на 6,7 %) та зниження діастолічної дисфункції. Також зареєстровано підвищення життя, якість життя.

Висновки. Включення в комплексне медикаментозне лікування інгібітора НЗКГ-2 дапагліфлозину приводило до вірогідної покращення параметрів центральної кардіо-тахікардіоміопатії та зниження частоти розвитку і вираженості реперфузійних аритмій та зміни післяінфарктної лівошлуночкової недостатності, що сприяв покращенню показників якості життя.

Ключові слова: цукровий діабет 2-го типу; інфаркт міокарда з елевацією сегмента ST; черезшкірні коронарні втручання; дапагліфлозин; якість життя.