



EFFECTIVENESS OF EMPAGLIFLOZIN IN THE COMPREHENSIVE TREATMENT OF ACUTE HEART FAILURE

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To evaluate the effectiveness of empagliflozin in the comprehensive treatment of acute coronary syndrome (ACS) complicated by acute heart failure (AHF) in patients with type 2 diabetes mellitus (DM).

ABSTRACT

The results of empagliflozin use as part of comprehensive pharmacological therapy for ACS complicated by AHF were studied in 27 patients with type 2 DM who were hospitalized at the Kashkadarya branch of the Republican Scientific Center for Emergency Medical Care during the period from 2021 to 2023. Among them, 19 (70.4%) were men and 8 (29.6%) were women. The mean age of the patients was 62.0 ± 12.3 years, ranging from 46 to 83 years. The patients were divided into two groups: the main group ($n = 10$) received empagliflozin 10–25 mg/day in addition to standard therapy, whereas the control group ($n = 17$) received only conventional therapy.

Objective. To evaluate the effectiveness of empagliflozin in the comprehensive treatment of acute coronary syndrome (ACS) complicated by acute heart failure (AHF) in patients with type 2 diabetes mellitus (DM).

Materials and Methods. The results of empagliflozin use as part of comprehensive pharmacological therapy for ACS complicated by AHF were studied in 27 patients with type 2 DM who were hospitalized at the Kashkadarya branch of the Republican Scientific Center for Emergency Medical Care during the period from 2021 to 2023. Among them, 19 (70.4%) were men and 8 (29.6%) were women. The mean age of the patients was 62.0 ± 12.3 years, ranging from 46 to 83 years. The patients were divided into two groups: the main group ($n = 10$) received empagliflozin 10–25 mg/day in addition to standard therapy, whereas the control group ($n = 17$) received only conventional therapy.

Results. Among patients with ACS developing on the background of type 2 DM ($n = 27$), hypertension was present in 24 (88.9%) cases, obesity in 15 (55.6%), anemia in 10 (37.0%), chronic kidney disease in 8 (29.6%), and thyroid disorders in 3 (11.1%).

In the control group receiving conventional therapy, a more pronounced reduction in systolic blood pressure (SBP) during the hospital stay was observed—from 138.8 ± 15.1 to 112.6 ± 13.5 mmHg ($p < 0.001$). In contrast, in the main group receiving empagliflozin, the reduction in SBP was somewhat less pronounced—from 139.5 ± 15.5 to 118 ± 10.3 mmHg ($p < 0.05$), which likely indicates a safer and more gradual effect of empagliflozin on the hemodynamic parameters of patients with ACS occurring in the presence of type 2 DM.

In patients receiving empagliflozin, the dynamics of fluid balance were significantly more favorable ($p < 0.05$) compared with the control group. This allowed a reduction in the mean daily dose of the parenteral diuretic (furosemide) in the main group by days 7–12 of treatment—from 54 mg to 26 mg ($p < 0.01$). In the control group, during the same observation period, the mean daily dose of furosemide remained within 62–64 mg.

By the 10th day of therapy with empagliflozin, patients in the main group demonstrated statistically significant positive changes on echocardiography ($p < 0.05$), including improvements in the indexed right atrial volume, left ventricular end-systolic volume, left ventricular ejection fraction (LVEF), and systolic pulmonary artery pressure. During the same period, patients in the control group showed a significant increase ($p < 0.05$) in left ventricular end-systolic volume, while the indexed left atrial volume showed no significant change.

Mortality in the main group was 10%, compared with 17.6% in the control group (Fisher's exact test, two-tailed = 1.000; $p > 0.05$).

Conclusion. In patients with type 2 DM, the standard therapy for ACS should be supplemented with empagliflozin from the first day of hospitalization. Regardless of carbohydrate metabolism status and left ventricular ejection fraction, empagliflozin contributes to a more rapid resolution of the clinical and echocardiographic manifestations of AHF, is characterized by a more gradual reduction in blood pressure, and enhances the diuretic effect of furosemide. These findings support considering empagliflozin as an effective adjunct to standard therapy starting from the first day of hospitalization..

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