International Congress on
Biological, Physical And Chemical Studies

International Congress on Biological, Physical And Chemical Studies - is an international conference platform under open open-access policy. The conference is led by international expert members who take an abjective approach to peer review, ensuring each research paper is reviewed, edited by authors and evaluated on its own scholarly merits and research integration. Publishing and joining on the procedding of the International Congress on Biological, Physical And Chemical Studies will exs ure publishing experience and indexing possibilities on various global indexing.

Genotype-Dependent Differences in Sglt2 Inhibitor Efficacy in Cardiorenal Syndrome

Tosheva Kh. B.
Bukhara State Medical Institute, Bukhara, Uzbekistan

Gadaev A. G.
Tashkent Medical University, Tashkent, Uzbekistan

Boboev A. T
Republican Specialized Scientific-Practical Medical Center of Hematology, Tashkent, Uzbekistan

ABSTRACT

SGLT2 inhibitors (dapagliflozin) belong to a group of modern drugs with proven efficacy in chronic heart failure and chronic kidney disease. However, treatment response varies significantly among patients. The pharmacogenetic approach enables prediction of treatment efficacy based on genotypes and development of personalized treatment strategies.

KEYWORDS: cardiorenal syndrome, SGLT2 inhibitor, dapagliflozin, pharmacogenetics, personalized medicine.

Objective. To evaluate the efficacy of SGLT2 inhibitor (dapagliflozin) in patients with cardiorenal syndrome (CRS) according to TGF-β1 and CYP11B2 gene polymorphisms.

Material and methods. One hundred patients with CRS received dapagliflozin 10 mg/day for 6 months in addition to standard pathogenetic therapy (ACEi/ARB, β-blockers, MRA, diuretics). TGF-β1 rs1800473 and CYP11B2 –344C/T polymorphisms were determined by PCR-RFLP method. Dynamic assessment included eGFR, TGF-β1, aldosterone, collagen IV, and 6-minute walk test (6MWT) parameters.

Results. After 6 months of treatment, eGFR increased by 10.9% in the overall group (from 38.6±2.4 to 42.8±2.6 mL/min/1.73m²), TGF-β1 decreased by 21.4%, and aldosterone decreased by 21.6% ($p<0.001$ for all).

Significant differences were identified according to TGF-β1 rs1800473 genotypes: eGFR increased by +6.8 mL/min/1.73m² (+15.2%) in the TT genotype, whereas only +1.8 mL/min/1.73m² (+4.8%) in the SS genotype ($p<0.01$). TGF-β1 levels decreased by 32.4% in the TT genotype and by 12.8% in the SS genotype ($p<0.001$). 6MWT distance increased by +82.4

meters in TT and +42.6 meters in SS.

A similar trend was observed for CYP11B2 –344C/T polymorphism: aldosterone decreased by 32.6% in the CC genotype and by 12.8% in the TT genotype ($p<0.001$).

Conclusion. SGLT2 inhibitor efficacy varies significantly depending on genotypes. Treatment efficacy is 2.5-3 times higher in carriers of TT (TGF-β1) and CC (CYP11B2) genotypes. Carriers of high-risk genotypes (SS, TT) require more intensive treatment regimens and closer monitoring. A genotype-based personalized treatment strategy has been developed.