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Safety and efficacy of initiation SGLT in heart failure with a reduced left ventricular ejection fraction and chronic kidney disease on top of standard therapy with ARNI or ACE-i

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Quadruple therapy remains underused in cases of heart failure with a reduced ejection fraction (HFrEF). Among eligible patients most of them take ACE-i/ARB and B-blockers, less MRAs and ARNI. There are many questions of adding new foundational drugs, especially in the case of coexisting of HFrEF and chronic kidney disease (CKD).

The aim was to compare the safety and effectiveness of initiation SGLT in patients (P) with HFrEF and CKD on standard therapy with ARNI or ACE-I.

Methods: we identified 54 symptomatic P with HFrEF (EF≤40%) and CKD 3 (eGFR between 30 and 60 ml/min) on standard therapy (ACE-I or ARNI, B-blockers, MRAs). All P were divided into 2 groups: group 1- 26 P on ARNI, B-blockers, MRAs; group 2- 28 P on ACE-I, B-blockers, MRAs. All P started on dapagliflozin (D) with a dose of 10 mg daily. The potassium (K), creatinine levels, eGFR, clinic BP were estimated at baseline and at weeks 1, 2, 4, 6, 8, 12. At baseline and at weeks 4, 12 NT-proBNP, urine albumin-to-creatinine ratio (UCAR) were estimated and P underwent 24-hour BP measurements.

Results: At week 1 after initiation of D a mean eGFR decreased not significant in both group. At week 2 in group 1 mean eGFR decreased by 1,9 ±1.1 ml/min/1.73m2, P<.05 and group 2-2,5±1.9 ml/min/1.73m2, P<.05. At week 4 in both groups mean eGFR decreased significantly, but in group 2 the decline of eGFR was more pronounced (-2,4±2.6 ml/min/1.73m2 vs.-3,3±2.5 ml/min/1.73m2, P=.04), with not significant decreasing to 6, 8, 12 weeks. At week 1mean K changed not significantly after start of therapy in both groups. At week 4 in group 1mean K decreased significantly from 4.97±0.6 to 4.63±0.57 mEq/l (P<.05), in group 2 K decreased not significant. At week 4 in group 1 was a greater reduction NT-proBNP than in group 2 (-234±42 vs. -143±32 ng/L, P<.05). At week 12 in both groups a significant decrease NT-proBNP were observed, but in group 1 more pronounced (-865±89 ng/L and -573±78 ng/L, (P<.01; P<.05 respectively). UCAR was also reduced significantly in both groups, but in group 1 more pronounced (P<.01; P<.05 respectively). In group 1, there were more cases of symptomatic hypotension (10 vs. 8, P<.05) and greater decrease mean BP than in group 2 (P<.05), but it didn't result in a withdrew. In return, maen doses diuretics were carefully decreased in both groups. At baseline in patients with HFrEF was an inverse correlation between GFR and NT-proBNP level (r= −0.328, P<.05). By linear regression analysis the eGFR was associated with NT-proBNP change (P<.05).

Conclusion: In patients with HFrEF and CKD, adding SGLT to standard therapy with ARNI, B-blockers, MRAs were paralleled by marked improvements in the neurohumoral profile by significantly reduced NT-proBNP compared with ACE-I, B-blockers, MRAs. SGLT initiation caused an early drop in eGFR, but in group ARNI the decline of eGFR was less pronounced with greater reduction in the albuminuria and was accompanied by decreased potassium level.