SLGT2 inhibitors' effect on serum electrolyte levels, kidney function and NTproBNP in patients with heart failure with preserved and reduced ejection fraction

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Introduction

Sodium-glucose cotransporter 2 (SGLT2) inhibitors are considered the cornerstone of heart failure (HF) therapy across the ejection fraction (EF) spectrum, with plethora of metabolic effects (1). SLGT2 inhibitors improve glycaemic control, slow the progression of kidney disease, and inhibit the endothelial disfunction (2). Knowledge on effects of SGLT2 inhibitors on serum electrolyte levels and kidney function in patients with preserved (HFpEF) and reduced HF (HFrEF) is still limited.

Methods

This was a registry-based study recruiting patients diagnosed with HF from May 2021 to February 2024 in Clinical Hospital Dubrava, Zagreb, Croatia. We extracted data on age, gender, NTproBNP and sodium, potassium, and chloride levels, as well as estimated glomerular filtration rate (eGFR). Patients with mildly reduced EF were grouped with patients with HFrEF.

Results

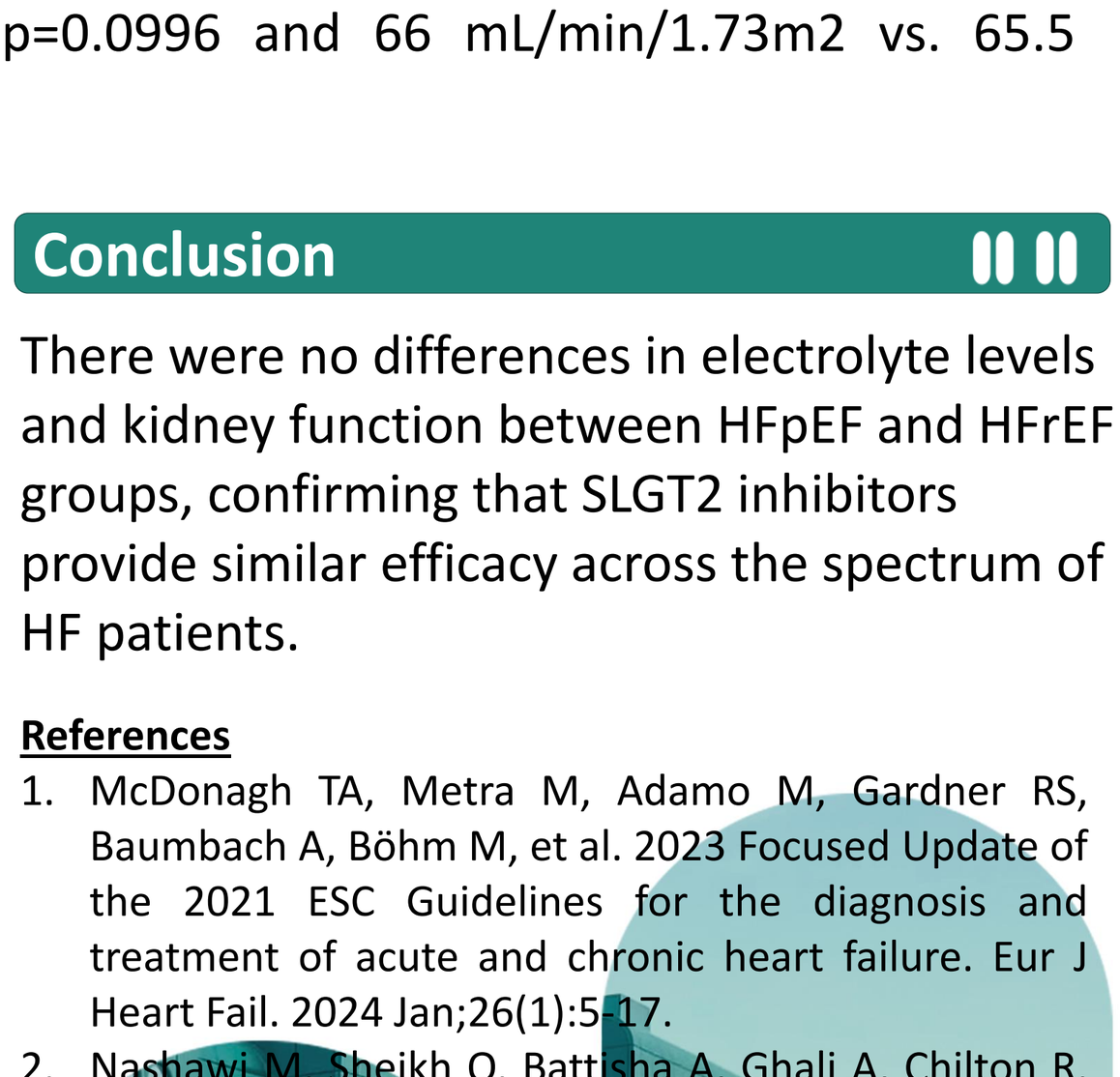
- We have collected data from 1,018 patients diagnosed with HF at our centre (median age 70 (95%CI 69-70.76) years, 33% female)
- HFpEF was diagnosed in 125 (12.3%), while HFrEF was diagnosed in 893 (87.7%) patients
- Initial NTproBNP was higher in the HFrEF group (1615.5 vs. 2667 pg/L, p<.001). After a mean follow up of 10.24 (9.9 to 10.58) months, there were no differences in NTproBNP levels at 6 and 12 months between HFrEF and HFpEF groups
- There were no differences in eGFR, potassium, or chloride serum levels at admission nor in the follow up. The eGFR remained stable throughout the follow up period (66.45 mL/min/1.73m2 vs 65.5 mL/min/1.73m2, p=0.0996 and 66 mL/min/1.73m2 vs. 65.5 mL/min/1.73m2, p=0.1453)

Table 1. Participants' characteristics (N=1018)

	HFpEF group (N=125)	HFrEF group (N=893)	P-value
Age	73 (72.0-74.94)	69 (68-70)	0.0004
Sex			
Male	56 (52.5%)	626 (70.01%)	
Female	69 (47.5%)	267 (29.9%)[#]	
Body mass index (kg/m²)	30.44 (28.92-31-37)	28.67 (27.96-29.16)	0.0074
NTproBNP at admission (pg/L)	1615.5 (1098.43-2020-84)	2667 (2413.96-3083.03)	<0.0001
NTproBNP at 6 months (pg/L)	712 (610.27-1085.1)	938 (862.73-1001.57)	0.0981
NTproBNP at 12 months(pg/L)	590 (420.94-939.67)	689 (639.71-757.59)	0.6358
eGFR at admission (45mL/min/1.73m²)	65.09 (60.31-69.7)	66 (63.89-67.85)	0.4071
eGFR at 6 months (45mL/min/1.73m²)	66.2 (49.96-73.85)	65.4 (63-67.42)	0.1707
eGFR at 12 months (45mL/min/1.73m²)	63.1 (48.22-77.01)	65.7 (61.23-68.8)	0.2103
Potassium at admission (mmol/L)	4.3 (4.2-4.4)	4.3 (4.3-4.4)	0.8729
Potassium at 6 months (mmol/L)	4.3 (3.96-4.73)	4.3 (4.3-4.4)	0.6646
Potassium at 12 months (mmol/L)	4.5 (4.2-4.61)	4.4 (4.4-4.6)	0.4323
Chloride at admission (mmol/L)	103 (102-103)	103 (102-103)	0.8178
Chloride at 6 months (mmol/L)	102 (101-103)	103 (102-103)	0.400
Chloride at 12 months (mmol/L)	104 (103-104)	103 (103-103)	0.4078
Haematocrit at admission	0.3975 (0.3907-0.4056)	0.411 (0.407-0.415)	0.1042
Haematocrit at 6 months	0.4050 (0.3905-0.4239)	0.426 (0.421-0.0431)	0.0171
Haematocrit at 12 months	0.4265 (0.4010-0.4430)	0.4310 (0.4260-0.4377)	0.3972

Conclusion

There were no differences in electrolyte levels and kidney function between HFpEF and HFrEF groups, confirming that SLGT2 inhibitors provide similar efficacy across the spectrum of HF patients.



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