Effects of sacubitril/valsartan in patients with a systemic right ventricle

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Background: Sacubitril/valsartan has been proved to reduce mortality in heart failure and reduced ejection fraction (EF) and is currently recommended as first-line therapy. However, effects in patients with a systemic right ventricle (sRV) have not been systematically investigated yet.

Purpose: We aimed to assess safety and efficacy of sacubitril/valsartan in patients with a sRV

Methods: From September 2020 to April 2021, all patients with congenitally corrected transposition of the great arteries (TGA) or TGA after Senning/Mustard repair attending our tertiary centre were prospectively enrolled. Inclusion criteria were: age ≥ 18 years, 3-months of optimal medical therapy including ACEi/ARB and sRV EF ≤ 40%. Patients with univentricular physiology, systolic blood pressure (SBP) < 90 mmHg, glomerular filtration rate (GFR) < 30 ml/min or K > 5.5 mEq/L were excluded. SBP and blood samples were obtained at 1-month of treatment. Other clinical and echocardiographic variables were reassessed at 6 and 12-month follow-up and the medication was progressively up-titrated to the highest tolerated dose.

Results: Fifty-one patients (38±11 years, 60% male, 34% ccTGA) were included. Up to March 2022, 48 (92%) patients were reviewed after 6 months of therapy and 35 (68%) completed the first year of follow-up. Baseline patients’ characteristics are summarized in Table 1. At 1 month, treatment did not impact on the serum potassium values (4.5±0.3 vs 4.4±0.3 mEq/L, p=0.3) and GFR (112±33 vs 112±31 ml/min, p=0.3), while SBP dropped significantly (119±13 vs 108±18 mmHg, p=0.003). Two patients ceased the treatment due to symptomatic hypotension during the first month. One patient developed a nephrotic syndrome at 4 months of follow-up, which was likely unrelated to the treatment. No other major adverse events were reported. One patient was lost to follow-up after 3 months. Despite no significant change in the NYHA class (p=0.9), the 6-minute walking distance increased significantly at 6-month (Table 2). NT pro BNP values were significantly decreased at 6-month, and returned to baseline at 12-month. Improved sRV systolic function was demonstrated at 6 and 12-month by significant increase in fractional area change, RV global longitudinal strain and sRV EF measured with 3D echocardiography.

Conclusions: Our mid-term results showed that sacubitril/valsartan is well tolerated in patients with a sRV and leads to significant improvement of sRV systolic function, supporting its use in this complex population.