Tissue Doppler, Speckle Tracking and Strain Imaging

# Improvement of left ventricular systolic performance during sacubitril/valsartan in a cohort of patients with heart failure and reduced ejection fraction

Monosilio S.; Filomena D.; Cimino S.; Neccia M.; Luongo F.; Mariani M.; Birtolo LI.; Benedetti G.; Fedele F.; Maestrini V.; Agati L.

Sapienza University of Rome, Rome, Italy

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**Background:**Sacubitril/valsartan is a well-established therapeutic option for patients with heart failure with reduced ejection fraction (HFrEF). While it was clearly demonstrated to improve patients' clinical conditions, its potential role in inducing left ventricle (LV) reverse remodeling is still under investigation.

**Purpose:**to evaluate clinical and echocardiographic effect of sacubitril/valsartan on a cohort of patients with HFrEF after six months of therapy.

**Methods:** 36 patients with HFrEF eligible to start a therapy with sacubitril/valsartan were enrolled. A standard and advanced echocardiographic evaluation was performed before starting the therapy and after six months of follow up (FU). Off-line analysis of left ventricle global longitudinal strain (GLS), longitudinal strain of the free wall of the right ventricle (RVFWSL) and left atrial strain (LAS) was conducted. Clinical and biochemical parameters were evaluated as well.

**Results:**At six months of FU NYHA class improved in the vast majority of patients (NYHA class III at baseline vs FU: 56% vs 5%, p 0.001). We observed a significant reduction in LV end-diastolic (99.62 ± 33.24 vs 91.54 ± 33.36, p 0.043) and end-systolic (69.99 ± 26.01 vs 58.68 ± 25.7, p 0.001) volumes and an improvement of LV ejection fraction (30.4 ± 5.02 vs 37.3 ± 6.4, p < 0.001). After six months of therapy, GLS significantly improved (-9.71 ± 2.87 vs -13.04 ± 3.14, p < 0.001). No differences in left and right atrial volumes (respectively 56.6 ± 29 vs 54 ± 30, p 0.349; 54.7 ± 23.7 vs 48.3 ± 19, p 0.157), RVFWSL (-16,5 ± 5,4 vs -16,8 ± 1,5) and LAS (14 ± 6 vs 19 ± 8, p 0.197) were found at FU.

**Conclusion:**Left ventricular function evaluated with standard and advanced echocardiographic parameters improved after six months of therapy with sacubitril/valsartan in HFrEF patients. Reduction in LV volumes was found as well.

Echo Analysis

| | Baseline Echo Analysis (n= 36) | 6 Months FU Echo Analysis (n= 36) | p |
|---|---|---|---|
| LVEDVi, mL/m2 | 99, 62 ± 33,24 | 91,54 ± 33,36 | 0,043 |
| LVESVi, mL/m2 | 69,99 ± 26,01 | 58,68 ± 25,7 | 0,001 |
| LVEF, % | 30,4 ± 5, 02 | 37,3 ± 6,4 | < 0,001 |
| E/E' average | 12,16 ± 3,74 | 9,71 ± 1,33 | 0,023 |
| LS Endo Average ,% | -9,71 ± 2,87 | -13,04 ± 3,14 | < 0,001 |

**LVEF:** left ventricular ejection fraction, LVEDVi: left ventricular end diastolic volume indexed, LVESVi: left ventricular end systolic volume indexed; LS: longitudinal strain