Abstract: 4940

Early reverse remodelling assessed by myocardial work after sacubitril-valsartan therapy

Authors:
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Topic(s):
Tissue Doppler, Speckle Tracking and Strain Imaging

Citation:

Introduction
Sacubitril/Valsartan (LCZ696) had prognosis benefit demonstrated in PARADIGM-HF trial, however less is known about his effects in cardiac dimensions and function.

Myocardial work (MW) is a new transthoracic echocardiographic (TTE) parameter. None is known about the effects of LCZ696 therapy in MW parameters.

Purpose
The aim of this study was to prospectively compare several TTE parameters, including MW, before and after LCZ696 therapy.

Methods
Prospective evaluation of chronic HF patients with optimized standard of care therapy and LVEF=40%, in which LCZ696 therapy was started.
TTE study was performed before and 6 months after LCZ696 therapy. A semiautomated analysis of GLS was performed and MW were estimated using custom software of GE Vivid E95 ultrasound system.

Results
Of the 42 patients, 35 (83.3%) completed the 6 months follow-up, since 2 patients (4.8%) died and 5 patients (11.9%) discontinued treatment for adverse events. Mean age was 58.6 ± 11.1 years with 82.9% of male patients.
LV dimensions and atrial volumes were significantly lower at 6 months of treatment. LVEF had a mean absolute raise of 8.9% and GLS a relative decrease of 27.8%. MW had a significant increase in constructive work (720.2mmHg VS 900.6mmHg, p=0.016) and work efficiency (78.6% VS 86.6%, p=0.027), with a non-significant decrease in the wasted work (150.2mmHg VS 136.8mmHg, p=0.441).

Conclusion
LCZ696 therapy is associated with signs of reverse remodelling in TTE, including an increase in constructive work and work efficiency.

<table>
<thead>
<tr>
<th></th>
<th>Time 0</th>
<th>6 months</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV end-diastolic diameter (mm)</td>
<td>71.3 ± 8.4</td>
<td>66.9 ± 7.6</td>
<td>0.001</td>
</tr>
<tr>
<td>LV end-systolic diameter (mm)</td>
<td>57.8 ± 9.4</td>
<td>53.1 ± 9.3</td>
<td>0.002</td>
</tr>
<tr>
<td>Interventricular septum (mm)</td>
<td>9.6 ± 1.7</td>
<td>9.9 ± 1.9</td>
<td>0.280</td>
</tr>
<tr>
<td>LVEF (%)</td>
<td>29.3 ± 6.4</td>
<td>38.2 ± 8.9</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>GLS (%)</td>
<td>-7.0 ± 2.9</td>
<td>-8.9 ± 2.8</td>
<td>0.001</td>
</tr>
<tr>
<td>MW - Constructive (mmHg)</td>
<td>720.2 ± 230.5</td>
<td>900.6 ± 343.2</td>
<td>0.016</td>
</tr>
<tr>
<td>MW - Wasted (mmHg)</td>
<td>150.2 ± 83.3</td>
<td>136.8 ± 54.2</td>
<td>0.441</td>
</tr>
<tr>
<td>MW - Efficiency (%)</td>
<td>78.6 ± 10.8</td>
<td>86.6 ± 12.0</td>
<td>0.027</td>
</tr>
<tr>
<td>E/e’</td>
<td>13.7 ± 4.5</td>
<td>12.8 ± 4.9</td>
<td>0.449</td>
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<th>Time 0</th>
<th>6 months</th>
<th>p</th>
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<tbody>
<tr>
<td>Pulmonary artery systolic pressure (mmHg)</td>
<td>38.3 ± 12.2</td>
<td>30.9 ± 10.6</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Left atrium volume (ml/m²)</td>
<td>51.5 ± 22.6</td>
<td>43.7 ± 15.8</td>
<td>0.004</td>
</tr>
<tr>
<td>Right atrium volume (ml/m²)</td>
<td>33.1 ± 4.4</td>
<td>28.5 ± 13.5</td>
<td>0.036</td>
</tr>
<tr>
<td>TAPSE (mm)</td>
<td>19.2 ± 4.4</td>
<td>20.0 ± 4.9</td>
<td>0.404</td>
</tr>
</tbody>
</table>

TTE data before and after 6 months of LCZ696 treatment

Figure 1 - Global longitudinal strain and Myocardial Work efficiency before (upper picture) and after (below picture) LCZ696 therapy in a patient with a TTN gene mutation, causing Dilated Cardiomyopathy.