Abstract: P366

Role of mechanical dispersion in the prediction of heart failure admissions in dilated non ischemic cardiomyopathy

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Topic(s):
Imaging: Myocardial Disease

Citation:
Introduction:
Non ischemic dilated cardiomyopathy (DCM) is a disease with poor prognosis and limited therapeutic options. Several echocardiographic measures attempt to provide good estimators of the risk of heart failure (HF) admissions.

Purpose:
To assess the potential additional value of mechanical dispersion (MD) compared to global longitudinal strain (GLS) in the prediction of outcomes in DCM.

Methods:
74 patients with DCM and left ventricle ejection fraction (LVEF) of less than 50% were prospectively evaluated from 2015 to 2019. MD and GLS were blindly measured using 2D speckle tracking echocardiography. Hospital admissions due to worsening HF were examined.

Results:
Mean LVEF was 29.4%, and median follow-up time was 14 months. Baseline characteristics are shown in Table 1.

Patients with high MD, defined as >67 ms, showed a significantly higher risk of admissions due to HF (50.5% vs 22.0%, p=0.026), even when adjusted with LVEF and end-diastolic volume in multivariable analysis, with a hazard ratio of 2.6 (95% confidence interval 1.1-6.1) (Figure). No differences in the use of cardiac resynchronization therapy and implantable cardioverter defibrillator were observed in both groups. This cut off value had a Sensitivity of 52.2% and Specificity of 76.5%.

Despite significant correlation between MD and GLS (R=0.36, p=0.002), a GLS of less than -10% was not significantly associated with higher incidence of HF admissions in this population (40.6% vs 23.8%, p=0.229).

Conclusion:
Mechanical dispersion, measured by 2D speckle tracking echocardiography, predicts HF admissions more accurately than global longitudinal strain in patients with non-ischemic DCM.

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>62.2 (±2.2)</td>
<td>64.6 (±3.0)</td>
<td>0.538</td>
</tr>
<tr>
<td>Female sex</td>
<td>13 (26.0%)</td>
<td>10 (41.7%)</td>
<td>0.173</td>
</tr>
<tr>
<td>NYHA class III-IV</td>
<td>4 (8.5%)</td>
<td>3 (13.6%)</td>
<td>0.882</td>
</tr>
<tr>
<td>CRT</td>
<td>23 (46.0%)</td>
<td>12 (50.0%)</td>
<td>0.747</td>
</tr>
</tbody>
</table>
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Table 1: baseline characteristics in population with MD <67 ms or = MS. Data is shown as N(%) or Mean(±SD). CRT: cardiac resynchronization therapy. ICD: implantable cardioverter defibrillator. LVEDV: LV end-diastolic volume.

<table>
<thead>
<tr>
<th></th>
<th>MD &lt;67 ms (n=50)</th>
<th>MD ≥67 ms (n=24)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD</td>
<td>27 (54.0%)</td>
<td>17 (70.0%)</td>
<td>0.167</td>
</tr>
<tr>
<td>QRS duration (ms)</td>
<td>144.2 (±8.6)</td>
<td>152.7 (±7.9)</td>
<td>0.496</td>
</tr>
<tr>
<td>NTproBNP (pg/ml)</td>
<td>4495 (±964)</td>
<td>4488 (±1529)</td>
<td>0.997</td>
</tr>
<tr>
<td>LVEF (%)</td>
<td>29.9 (±1.1)</td>
<td>28.6 (±1.7)</td>
<td>0.520</td>
</tr>
<tr>
<td>LVEDV (ml/m2)</td>
<td>93.0 (±5.6)</td>
<td>95.2 (±5.8)</td>
<td>0.802</td>
</tr>
</tbody>
</table>

Table: baseline characteristics in population with MD <67 ms or ≥ MS. Data is shown as N(%) or Mean(±SD). CRT: cardiac resynchronization therapy. ICD: implantable cardioverter defibrillator. LVEDV: LV end-diastolic volume.