Abstract: P6

Characterisation of right heart dysfunction in left ventricular systolic failure

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

Citation:

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Nil

Background:
Left and right ventricular (RV) function is proposed to be intimately linked. Reduced systolic ventricular interaction in patients with reduced global left ventricular (LV) performance is hypothesised to result in a reduction in RV contractile performance, even if the RV is not directly involved in the disease process. Concurrent RV and LV dysfunction is known to carry a poorer prognosis. However, the incidence of RV structural change and systolic dysfunction in patients with LV dysfunction in patients in a clinical setting is not well characterised.

Purpose:
To determine the prevalence of RV systolic impairment in patients with LV systolic impairment from non-ischaemic cardiomyopathy (NICM); and to characterise the relationship between LV and RV systolic function using echocardiographic parameters.

Methods:
86 consecutive patients with stable heart failure with reduced ejection fraction secondary to NICM without valvular, congenital, and pulmonary disease were recruited. All patients underwent a comprehensive transthoracic echocardiogram and were stratified into tertiles based on LVEF (mild: 40-49%, moderate: 30-39%, severe: <30%). RV function was characterised using standard and novel measures. 2D RV free wall peak systolic strain (RV FWS) was measured using vendor independent software (TomTec Image Arena, Germany v4.6).

Results:
Of the mild, moderate and severe groups (mean age 58±34, 36% men): mean LVEF (%) was 46±6, 35±6, 22±10; mean pulmonary artery systolic pressure (mmHg) was 28±24, 34±31, 38±24; 26%, 79%, 74% had mild or moderate pulmonary hypertension respectively. 33% had RV impairment based on TAPSE of <1.6cm; 48% had RV impairment based on RVS’ of <10cm/s; and 65% had RV impairment based on a FAC of <35%.

Conclusion:
Whilst there is a concurrent increase in the prevalence of RV impairment with severity of LV systolic impairment, interestingly not all patients with LV dysfunction had RV dysfunction. The presence of RV dysfunction is greatest when measured using FAC and RV FWS. Routine screening of RV dysfunction in patients with HFrEF secondary to NICM may help identify patients with poorer prognosis, who could benefit with more intensive follow up and treatment.
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<table>
<thead>
<tr>
<th></th>
<th>(n = 31)</th>
<th>(n = 28)</th>
<th>(n = 27)</th>
<th>(P value)</th>
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<tbody>
<tr>
<td>Mean RV Basal Diameter (cm)</td>
<td>4.1±1.3</td>
<td>3.7±1.6</td>
<td>3.6±1.5</td>
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<tr>
<td>Mean TAPSE (cm)</td>
<td>2.1±0.8</td>
<td>1.9±1.0</td>
<td>1.7±1.1</td>
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<tr>
<td>Mean RVS' (cm/s)</td>
<td>11±5</td>
<td>11±6</td>
<td>9±6</td>
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<td>Mean FAC (%)</td>
<td>44±20</td>
<td>29±21</td>
<td>17±13</td>
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<tr>
<td>Mean RV FWS (%)</td>
<td>-27.4±14.4</td>
<td>-17.2±11.6</td>
<td>-7.9±6</td>
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