Abstract: P5553

Right ventricular involvement in hypertrophic cardiomyopathy: insights from a tertiary centre

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Topic(s):
Myocardial Disease – Epidemiology, Prognosis, Outcome

Citation:

Introduction: Hypertrophic cardiomyopathy (HCM) is the main cause of sudden cardiac death in the young and a cause of heart failure (HF) and death at any age. Nevertheless, adverse long-term outcomes are not easy to predict.

Objectives: To assess the prevalence and prognostic value of right ventricular (RV) involvement in patients (pts) with HCM.

Methods: Retrospective single-centre study of consecutive pts with HCM evaluated in a specialized consultation. Selected those submitted to cardiac magnetic resonance imaging (CMR) as the gold-standard for RV assessment. The primary endpoint (PE) was a composite of cardiovascular death, nonfatal myocardial infarction, nonfatal stroke, ventricular arrhythmias with hemodynamic instability and unplanned HF admission.

Results: Of a total of 181 pts, 104 fulfilled the inclusion criteria (mean age at first consultation 62.1 ± 9.7 years, 63.5% male). Septal asymmetric phenotype was the most frequent (73.1%) and 24 pts (23.1%) had rest LV outflow tract obstruction. Mean value of maximum wall thickness was 18.8± 4.6 mm. Regarding CMR parameters (Fig A), 5.8% had RV dysfunction and 2.9% RV free wall hypertrophy; no patient presented RV dilation. Late gadolinium enhancement (LGE) of joint points was observed in 47.1%. During follow-up (FU, mean 56.6 ± 29.5 months), survival free of RV dysfunction was 94.3%. Only 5 pts developed RV compromise assessed by echocardiographic parameters: TAPSE 12.0 ± 3.4 mm and pulsed tissue Doppler systolic annular velocity (tricuspid S’) wave 7.3 ± 0.9 cm/s. These pts were significantly older (p < 0.01) and had higher values of average tissue doppler E/E’ ratio at diagnosis (p < 0.01). Global RV involvement (at diagnosis or during FU) were associated with increased values of indexed left atrial area (p < 0.01), LV dysfunction (p = 0.01), LGE of joint points (p = 0.01) and higher values of NT-proBNP (p = 0.01). In multivariate logistic regression, left atrial enlargement was the only independent predictor of global RV dysfunction (OR 1.9, 95%CI 1.1-3.2, p = 0.01) and average E/E’ ratio an independent predictor of RV dysfunction during FU (OR 1.3, 95%CI 1.1-1.5, p < 0.01). PE rate was 10.6%. It was significantly higher in pts with global RV involvement and there was a significant difference in survival analysis (Fig B). Average E/E’ ratio (OR 1.5, 95%CI 1.1-1.9, p = 0.01) and RV ejection fraction (OR 0.8, 95%CI 0.7-0.9, p = 0.01) were independent predictors of the outcome.

Conclusions: Although not common, RV dysfunction was associated with a higher rate of cardiovascular events. Average E/E’ ratio, as a measure of left ventricular filling pressure, was a risk factor for both RV dysfunction and PE. Higher values of RV ejection fraction were protective of adverse events occurrence. Together, these results support a potential role of RV function in the risk stratification of HCM pts.
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<table>
<thead>
<tr>
<th>Morphofunctional Parameters</th>
<th>Left Cavities</th>
<th>Right Cavities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrial area (cm2/m2)</td>
<td>16.5 ± 6.9</td>
<td>10.6 ± 3.5</td>
</tr>
<tr>
<td>Ventricle end-diastolic volume (ml/m2)</td>
<td>87.3 ± 24.0</td>
<td>66.2 ± 10.3</td>
</tr>
<tr>
<td>Ventricle end-systolic volume (ml/m2)</td>
<td>32.8 (IQR 19.5)</td>
<td>24.2 ± 9.6</td>
</tr>
<tr>
<td>Ejection fraction (%)</td>
<td>59.6 ± 13.1</td>
<td>65.0 ± 9.4</td>
</tr>
</tbody>
</table>

IQR: interquartile range